February 2021

Binder 003, Acanthocolpidae [Trematoda Taxon Notebooks]

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Nagaty & Aal, 1962

Stephanostomum gaabooli sp.nov. (Fig. 4 and 4*a*)

Description based on whole mounts of the best five out of ten specimens from *Pherapon jarbua* locally called 'Gaabool'. Body elongate 1·03–1·73 long and 0·20–0·32 broad, cuticle without scales or spines. Oral sucker cone-shaped 0·24–0·30 by 0·11–0·14, anterior end broad, tapering posteriorly. Oral spines small, not sharply pointed, present in two complete alternating rows about 16–20 spines in each row; spines of anterior row measuring 0·023 by 0·009; spines of posterior row; measuring about 0·015 by 0·008. Prepharynx short, approximately 0·03; pharynx longer than broad 0·08–0·11 by 0·06–08; oesophagus very short 0·02–0·05. Intestinal caeca terminating near the posterior extremity, in some specimens seeming to open into the excretory vesicle. Ventral sucker small 0·14–0·15 by 0·14–0·17, in the second quarter of the body; 0·15–0·24 from oral sucker. Ratio of oral to ventral suckers 1·4:1.

Testes close together, intercaecal, entire, spherical, the anterior 0·08–0·15 in diameter and the posterior 0·08–0·17 by 0·08–0·15, tandem, situated in the posterior one-third of the body. Cirrus sac slender, slightly curved, extending about one-quarter of the distance between the ventral sucker and the ovary. Vesicula seminalis sinuous; cirrus short, genital atrium slightly submedian anterior to the ventral sucker, overlapping the right intestinal caecum immediately behind the intestinal bifurcation.

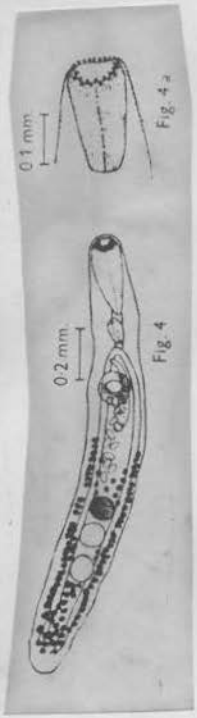
Ovary intercaecal, spherical 0·08–0·11 by 0·09, pre-testicular, near the anterior testis, mainly in the third quarter of the body. Receptaculum seminis absent. Vitellaria consisting of small follicles mainly extracaecal and partly overlapping the caeca in its anterior part, in posterior part filling all available space from a

level just anterior to the middle body and behind the cirrus pouch to near the posterior extremity. Uterus restricted to the area between the ventral sucker and the ovary, containing few large eggs; mean size 0·08 by 0·03. Excretory vesicle not seen.

Comparisons

This species shows some resemblance to *S. cesticillus* (Molin, 1858) Looss, 1899, but differs from it in having: (1) oral sucker cone-shaped, much elongate; (2) prepharynx short instead of being very long; (3) cirrus pouch extending about one-fourth distance between the ventral sucker and the ovary instead of more than one-half of this distance and (4) vitellaria extending anteriorly to behind the cirrus sac instead of being situated at the level of the cirrus sac. It differs from *S. pristis* Looss, 1901, mainly in (1) the shape of the oral sucker; (2) the short prepharynx and (3) spherical instead of oval testes. It differs from *S. caducum* Looss, 1901, mainly in (1) the shape of the oral sucker; (2) the position of the genital opening and (3) spherical instead of oval testes. It also differs from *S. megacephalum* Manter, 1940, mainly in the shape of the oral sucker and the testes.

32-40



Acanthocolpidae

Stephanostomum ghanensis Fischthal & Thomas, 1968

Host: Trachinotus goreensis Cuv. & Val., pampano; (Carangidae)
Habiatat: Stomach.

LOCALITY: Iture, Ghana.
DATE: 21 February 1966.
SPECIMEN: USNM Helm. Coll. No. 63331 (holotype).

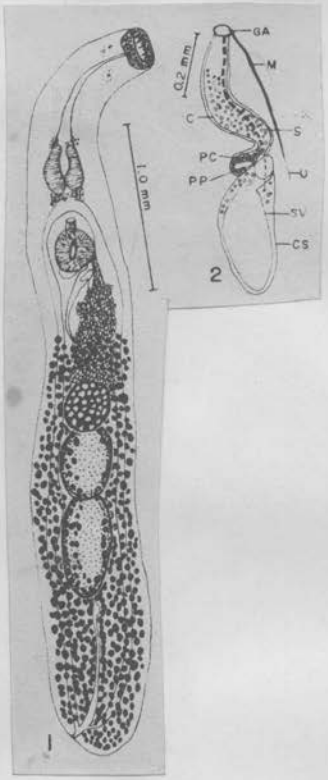
DIAGNOSIS (based on one adult and two immature specimens; adult measured): Body 4,498 by 630 at testicular level. Tegument annulated preacetabularly, spined to level of posterior testis. Eyespot pigment present. Forebody 1,365 long, hindbody 2,858 long. Oral sucker 172 by 230, truncate posteriorly. Circumoral spines 34–36 in number, in two alternating, uninterrupted rows; ventral oral spines 45–57 by 22–23, dorsal 61–63 by 19–24; ventral aboral spines 33–41 by 16–19, dorsal 65–75 by 21–23. Acetabulum 275 by 255, center at level of anterior one-third of body length. Sucker length ratio 1:1.60. Prepharynx 655 long, thick-walled, muscular; pharynx 300 by 245, pyriform, glands anterolaterally and posteriorly; esophagus 152 long, thick-walled, muscular, glands along length; cecal bifurcation just preacetabular; ceca conspicuously cell-lined, extending to posterior extremity, opening into excretory bladder.

Gonads tandem, contiguous, filling intercecal space, may overlap ceca ventrally. Testes two, smooth; anterior testis 440 by 330, dorsally overlapping ovary 51; posterior testis 605 by 295; posttesticular space 955 long, also long in immature specimens. Cirrus sac winding, 700 (longitudinal extent) by 152 at seminal vesicle, commencing 425 postacetabular (three-fifths of distance from latter to ovary), just contacting vitellaria medianly. Internal seminal vesicle 375 (longitudinal extent) by 145, saccular, somewhat winding anteriorly. Pars prostatica short, just posterodorsal to acetabulum, surrounded by few prostate cells. Cirrus long, winding, proximal part spined. Cirrus sac uniting with metraterm at anterior margin of acetabulum, forming short genital atrium. Genital pore median, just preacetabular.

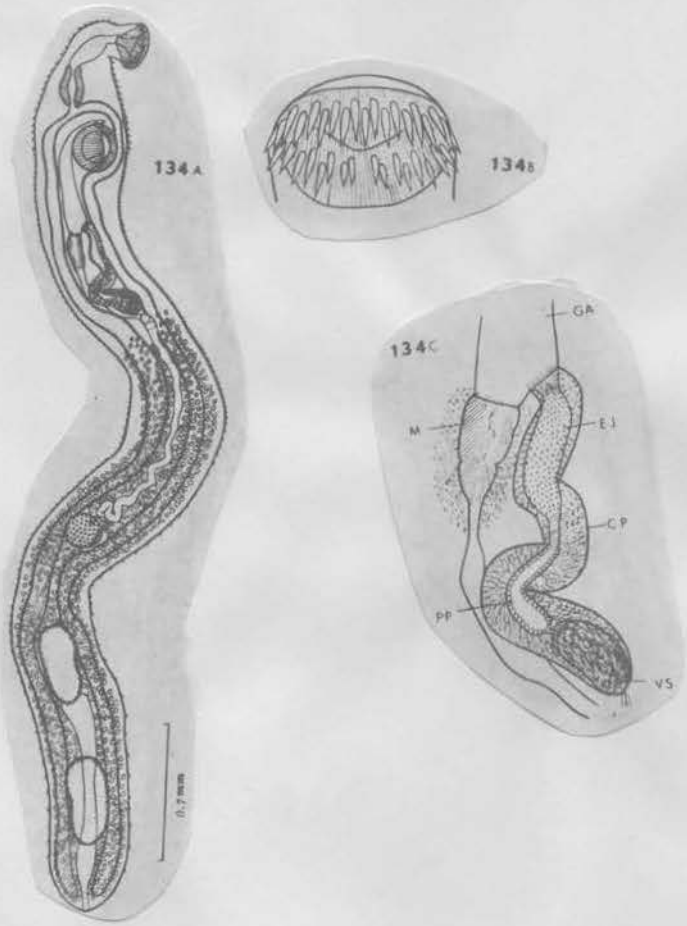
Ovary 218 by 232, smooth, lying 700 postacetabular. Ootype complex dorsal to ovary. Uterus extensively coiled between acetabulum and ovary, slightly overlapping latter dorsally, sperm in proximal portion. Metraterm thick-walled, shorter than cirrus sac, spines not observed. Vitellaria extensive, commencing 340 postacetabular; follicles ventral, lateral and dorsal to ceca, invading intercecal space dorsal to gonads but not confluent, filling posttesticular space except medianly, confluent dorsal to proximal half of uterus between anteriormost margin of vitellaria to just preovarian. Eggs yellow, thin-shelled, operculate, eight measuring 62–66 by 37–45, zygote undivided.

Excretory bladder long, narrow, extending to ovarian level, ducts reaching posterolateral margins of oral sucker before turning back on themselves and running posteriorly at least to vitellaria (probably beyond), pore terminal.

DISCUSSION: Our species could not be keyed to any species listed in the keys given by Manter and Van Cleave (1951) and Caballero (1952). The closest species appear to be *S. sentum* (Linton, 1910) Manter, 1947, and *S. anisotremi* Manter, 1940, but it differs from them in having a much longer posttesticular space, in the cirrus sac extending more than halfway to the ovary, and in the vitelline follicles being confluent dorsal to the proximal half of the uterus; it differs further from *S. anisotremi* in having fewer circumoral spines.



134. *Stephanostomum bawaiiense* n. sp. Yamaguti, 1970
(Fig. 134)



HABITAT: Intestine of *Caranx sexfasciatus*; Hawaii.
HOLOTYPE: U. S. Nat. Mus. Helm. Coll., No. 63733.
DESCRIPTION (based on seven whole mounts): Body elongate, subcylindrical, 3.4-8.5 mm long, 0.17-0.45 mm wide near rounded posterior extremity. Cuticle beset as usual with coarse spines up to 30 μ long on forebody except for subapical zone; spines on hindbody very fine, deciduous posteriorly. Eyespots indistinct, if present at all. Oral sucker terminal, shaped like a shallow bowl, 0.06-0.17 × 0.09-0.25 mm, with two alternate rows of 35 spines; largest lateral spines 35-58 μ long by 7-9 μ wide; a slit-like interruption may be present in midventral line. In a paratype with this midventral interruption, the inner midventral pair is 37-43 μ long and the outer pair 25-30 μ by 7-9 μ. Prepharynx 0.28-2.2 mm long; pharynx 0.09-0.2 × 0.07-0.15 mm, elliptical to subcylindrical or pyriform, rarely flask-shaped; esophagus very short, bifurcating slightly anterior to acetabulum; ceca terminating blindly at extreme posterior end of body. Acetabulum prominent, 0.12-0.26 mm in diameter, at or near middle of anterior third of body.

Testes oval to elliptical, 0.25-0.5 × 0.1-0.32 mm, tandem in caudal third of body, separated one from the other by vitellaria. Cirrus pouch 0.25-0.9 mm long lineally, subcylindrical, 0.06-0.11 mm wide posteriorly; seminal vesicle elongate oval or elliptical, 0.14-0.2 × 0.05-0.1 mm; pars prostatica well differentiated, 210 μ long by 44 μ wide in the type, surrounded by well-developed prostatic cells; ejaculatory duct 247 μ long by 63 μ wide in the type, lined densely with basally rounded spines, surrounded by accompanying cells which are more numerous distally than proximally, slightly constricted as it opens into the hermaphroditic duct; where the spines are replaced by ciliary structures. Hermaphroditic duct arising 0.27 mm behind acetabulum in the type, arcuate, distally, 0.6-2.0 mm long. Genital pore immediately pre-acetabular.

Ovary globular, 0.13-0.25 × 0.07-0.2 mm, always well separated from anterior testis by vitellaria, situated in median line or a little to right of it, in posterior part of middle third of body, or more posteriorly, especially when the body is extended. Laurer's canal opening dorsal to ovary to left of median line. No seminal receptacle. Uterus ascending in median field; metraterm densely lined with long cilia-like structures like distal end of ejaculatory duct, about 0.2 mm long by 90 μ wide and constricted off from uterus proper in the type, surrounded by dense coat of accompanying cells. Eggs oval, tapered and slightly knobbed at antiopercular pole, 46-54 × 32-37 μ in life, 58-77 × 42-54 μ in mounted condition. Vitellaria commencing at or behind level of posterior end of cirrus pouch at about junction of anterior with middle third of body in the type. This level, however, varies considerably according to the state of contraction of the body; it may be pre-equatorial or postequatorial (when extended), confluent between ovary and anterior testis but usually not between two testes and in posttesticular area; vitelline reservoir usually anterodorsal to ovary. Excretory vesicle apparently reaching to posterior end of anterior testis; pore terminal.

DISCUSSION: This species differs from the most closely related *Stephanostomum longisomum* Manter, 1940 from *Caranx hippos* of White Friars, Mexico in possessing a smaller number and smaller size of circumoral spines (38-40 in *S. longisomum*). Manter gives the egg size as 60-65 μ by 31-37 μ. If the measurements were made on mounted eggs, the eggs of the two species agree in length but not in width. In another related species, *S. pacificum* Yamaguti, 1951, with 36 oral spines, from *Caranx equula* of Japan, the acetabulum and testes are distinctly larger; the ovary is larger and exactly or nearly contiguous with the anterior testis. In *S. ditrematis* Yamaguti, 1939, with 36 oral spines, from *Ditrema temmincki* of Japan, the eggs are 60-63 × 42-45 μ in life. It is to be noted that each of these two Japanese species, unlike the present species, possesses a distinct cloaca.

Acanthocolpidae

40-42

Echinostephanus Yamaguti, 1934

GENERIC DIAGNOSIS. Acanthocolpidae Lühe, 1909; Stephanochasminae Nicoll, emended. Body slender, long, with attenuated neck, covered with strong alate spines arranged in quincunx from a little behind anterior end backwards, and the spines becoming gradually ~~smaller~~ toward middle of forebody, then smaller again and disappearing almost completely at ~~posterior~~ end of body. Anterior extremity truncate, armed with spindle-shaped spines arranged in two alternate rows; aboral spines larger than oral and dorsal spines larger than ventral. Oral sucker flat, funnel-shaped. Prepharynx very long. Pharynx longer than broad. Esophagus very short, bifurcating in front of acetabulum. Ceca opening into excretory vesicle at posterior end of body. Acetabulum prominent, in anterior third of body. Testes near posterior end of body, median, tandem, longitudinally elongate. Cirrus pouch very long, containing elongate club-shaped vesicula seminalis, long pars prostatica and cirrus. Ovary roundish, median, some distance in front of testis. Laurer's canal and receptaculum seminis uterinum present. Uterus confined to median fields, spirally coiled between ovary and acetabulum. Vitelline follicles lateral and dorsal, beginning some distance behind acetabulum. Eggs oval, thin-shelled, not very numerous. Excretory system Y-shaped. Parasitic in marine fishes.

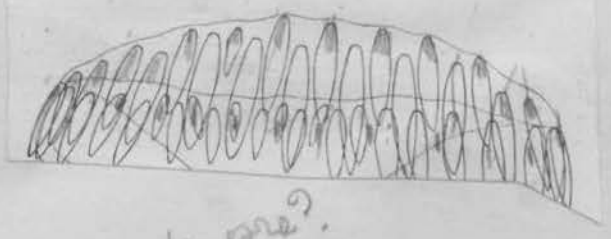
Genotype. *Echinostephanus hispidus*.

Stephanostomum n (Yam., 1934)
Echinostephanus hispidus n. sp. Manter, 1940

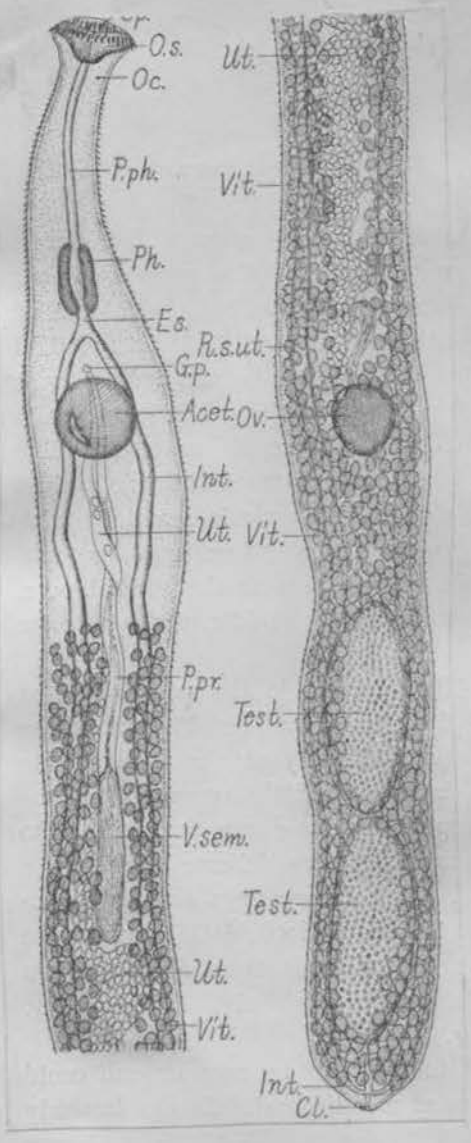
SPECIAL DIAGNOSIS. *Echinostephanus*; with generic characters. Body 6.8–9.8 × 0.52–0.62 mm. Cephalic spines 40–42; oral spines 0.032–0.076 × 0.008–0.013 mm, aboral spines 0.04–0.076 × 0.011–0.013 mm. Oral sucker 0.17–0.22 × 0.36–0.45 mm. Prepharynx 0.71–0.91 mm long. Pharynx 0.3–0.36 × 0.17–0.19 mm. Acetabulum 0.33–0.39 mm in diameter. Testes elliptical to oval, 0.64–1.1 mm long and 0.24–0.47 mm wide. Cirrus 0.24–0.33 × 0.23–0.32 mm. Eggs 0.068–0.075 × 0.05–0.06 mm.

Habitat. Intestine of *Seriola quinqueradiata*.

Locality and date. Pacific coast; March 27, 1927.



26 pre?
27 pre?



40-42 species
(22-27 pre.)

1934

Yamaguti: " This worm can be distingyished from other allied forms by the greatly elongated shape of the body, the characters of the cephalic as well as the integumentray spines the cecal connection with the excretory vesicle, the excessive length of the cirrus pouch, etc. These characters are sufficient to justify the erection of a new genus, for which I propose the name Echinostephanus."

a synonym of Stephanostomum
see Ward, 1938

.91
36 | 33.00
324
60

.87
45 | 39.00
360
60

sucker ratio

Stephanostomum bispidum (Yamaguti, 1934) Manter, 1940

Host.—*Seriola mazatlana* Steindachner, bohala [new host record].

Location.—Rectum.

Locality.—Saint Bartholomew Island and Galera Island, Archipielago de Las Perlas, Panama Pacific.

Discussion.—Yamaguti (1934) described this species from Seriola *quinqueradiata* in the Japanese Pacific and Manter (1940a) recorded it from *Seriola dorsalis* and *Seriola* sp. "not *dorsalis*" in Mexico, and from *Seriola dorsalis* in Panama. I have studied the specimens from *Seriola* spp. and these agree with the *S. hispidum* in my collection and with some specimens sent by Yamaguti to Manter. Two specimens of the *S. hispidum* of Manter (1940a) from *Elagatis bipinnulatus* in Panama were also studied. One was decapitated, the other intact. The crown spines of the intact specimen reveal that it is probably *S. ditrematis*.

Sogandares, 1959

Stephanostomum imparispine (Linton, 1905) Manter, 1940
Acanthocolpidae
= Distomum imparispine Linton, 1905

9. *Distomum imparispine*, sp. nov. [Figs. 189–194.]

Body elongate, of nearly uniform breadth throughout, narrowing somewhat at the neck and for a short distance behind ventral sucker. Neck and anterior part of body armed with spines, which are sagittate on the ventral side of the neck, slender and curved on the lateral margins of the neck, somewhat irregular on dorsal side of body, and disappear altogether about the posterior third. Mouth surrounded by stout but unequal spines, which are 33 in number in the sketch (fig. 190); 34 were counted in the specimen. The number is probably variable. Ventral sucker larger than oral, its posterior border situated at about the anterior fourth of the entire length of the worm; pharynx large, long pyriform, remote from the mouth. Testes two, large, near posterior end, on median line, end to end, the posterior one the larger; cirrus-pouch long, behind ventral sucker; genital aperture not distinctly seen, but evidently on or near median line, close in front of ventral sucker. Ovary near front end of anterior testis; uterus in front of ovary, its folds mainly between ovary and cirrus-pouch; ova moderately numerous and relatively large; vitellaria diffuse, abundant posteriorly, and extending laterally to a point near base of cirrus-pouch.

33-34

1901.—Aug. 1, 3.

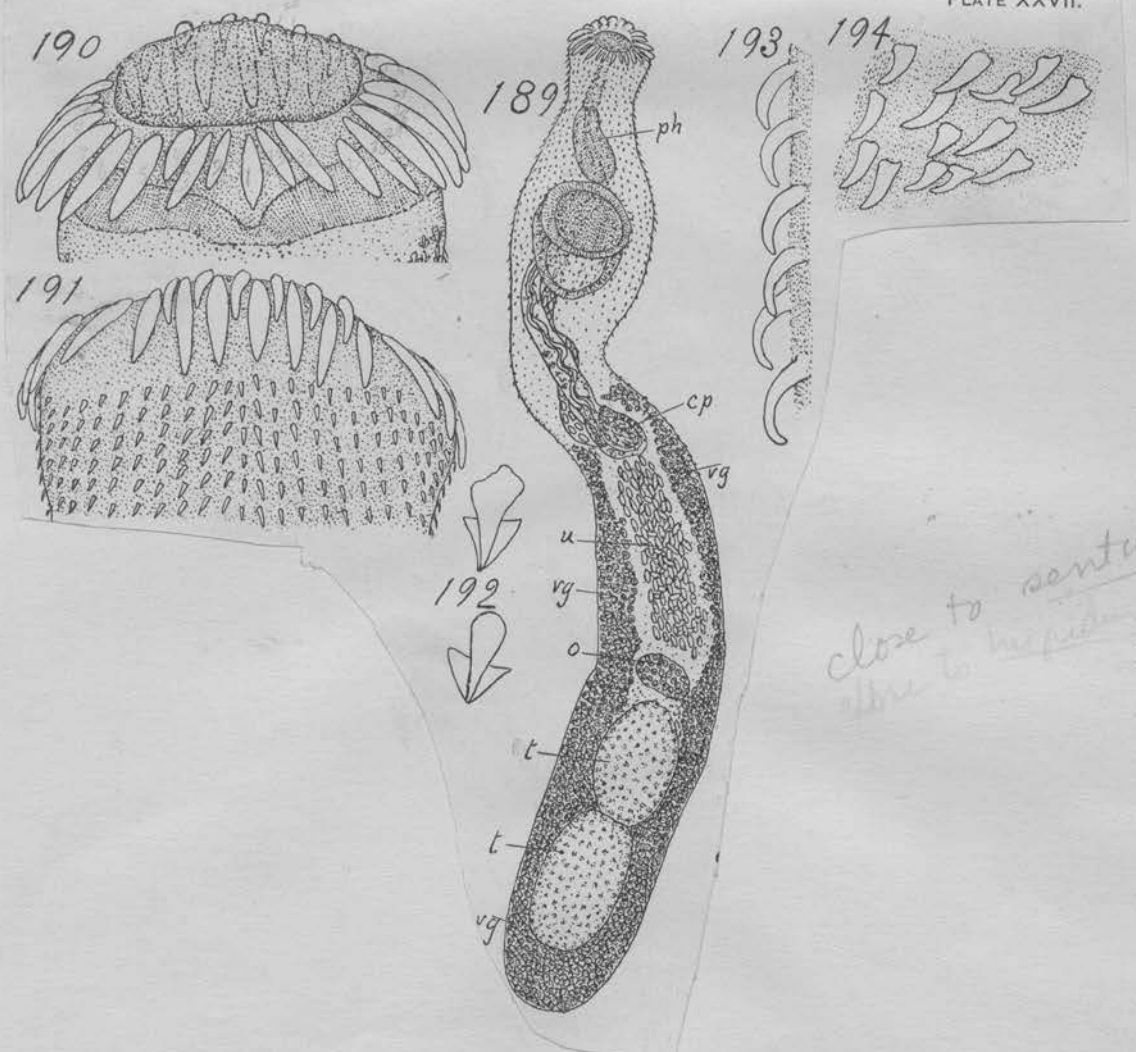
Dimensions, life, ventral view, in millimeters: Length 9; diameter of head 0.65; of neck, narrowest part, 0.5; transverse diameter of oral sucker a little difficult to make out on account of the spines but about 0.56; breadth of ventral sucker 0.7, length of same 0.9; diameter of globular ovary 0.3; length of anterior testis 0.84; of posterior testis 1.16; breadth of each 0.56; ova 0.07 by 0.04 in the two principal diameters; length of larger oral spines 0.15. Pharynx, same specimen in glycerin, length 0.45; breadth 0.21. Number of oral spines 34.

1.26
56)70
56
140
112
380

Host: Rachycentron canadus
Locality: Beaufort, N.C.

Bull. U. S. B. F. 1904.

PLATE XXVII.



close to centrum

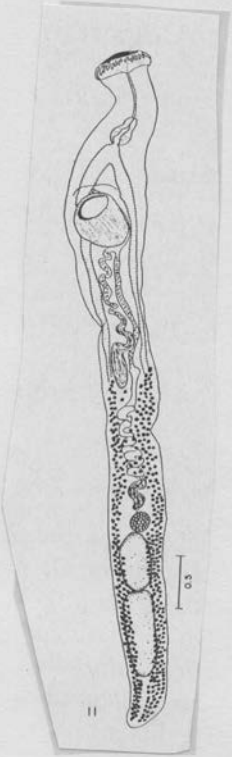
7. *Stephanostomum imparaspine* (Linton, 1905) Manter, 1940
(Figs. 11 to 12)

Host: *Rachycentron canadus* (Linn.); cobia; family Rachycentronidae
Incidence of Infection: In 1 of 1 hosts
Numbers: 5
Location: Rectum
Locality: Gulf of Mexico, 8 miles offshore from John's Pass, Madeira Beach, Florida; new locality record.

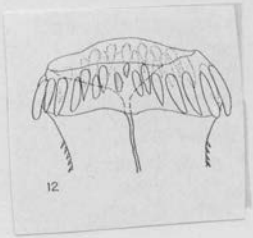
Discussion: Linton (1905) described *Distomum imparaspine* from *Rachycentron canadus* in Beaufort, North Carolina. To our knowledge, the species has not since been reported in the literature until Manter (1940) placed *D. imparaspine* in the genus *Stephanostomum.*

Our specimens possessed from 33 to 34 oral spines. *S. imparaspine* resembles *S. hispidum* but differs in the number of crown spines (33 to 34 as compared with 40 to 42), and ovary always in contact with anterior testis as compared with ovary separated from anterior testis by a band of vitelline follicles.

It has been the current practice of ichthyologists to use the name Rachycentridae for the type genus *Rachycentron.* The name should be Rachycentronidae as here used.



From Sogandares & Hutton, 1959



Stephanostomun interruptum n. sp. (Fig. 1). SPARKS AND THATCHER, 1958

Hosts: *Bairdiella chrysura* (Lacépède), silver perch; *Micropogon undulatus* (Linnaeus), croaker; *Cynoscion nebulosus* (Cuvier and Valenciennes), spotted trout or spotted squeteague; and *Ocyurus chrysurus* (Bloch), yellow tail.

Localities: Grand Isle, Louisiana; Port Aransas, Texas.

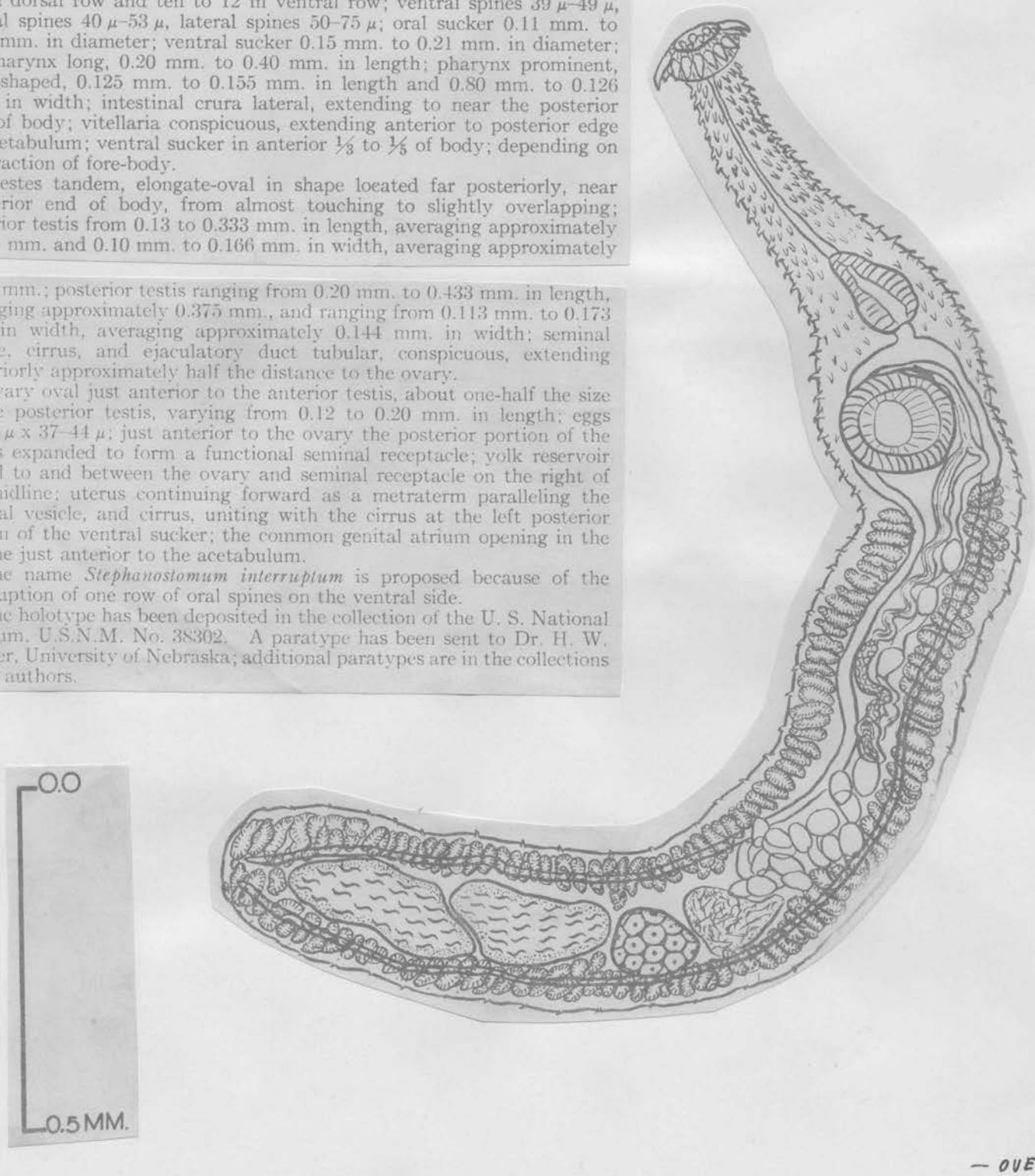
Diagnosis: With characteristics of the genus (Looss, 1899). Body elongate, measuring from approximately 1.5 mm. to 3.5 mm. in length and from 0.30 mm. to 0.35 mm. in width; body well-spined, spines longer and more numerous anteriorly, becoming reduced and more sparse posteriorly; spines curved near tips, pointing posteriorly; oral sucker surrounded by spines in a double row typical of the genus dorsally, but reduced to a single row on the ventral side; oral spines total 22–23, ten to 13 in dorsal row and ten to 12 in ventral row; ventral spines 39 μ–49 μ, dorsal spines 40 μ–53 μ, lateral spines 50–75 μ; oral sucker 0.11 mm. to 0.15 mm. in diameter; ventral sucker 0.15 mm. to 0.21 mm. in diameter; prepharynx long, 0.20 mm. to 0.40 mm. in length; pharynx prominent, pear-shaped, 0.125 mm. to 0.155 mm. in length and 0.80 mm. to 0.126 mm. in width; intestinal crura lateral, extending to near the posterior end of body; vitellaria conspicuous, extending anterior to posterior edge of acetabulum; ventral sucker in anterior ⅓ to ⅕ of body; depending on contraction of fore-body.

Testes tandem, elongate-oval in shape located far posteriorly, near posterior end of body, from almost touching to slightly overlapping; anterior testis from 0.13 to 0.333 mm. in length, averaging approximately 0.325 mm. and 0.10 mm. to 0.166 mm. in width, averaging approximately 0.137 mm.; posterior testis ranging from 0.20 mm. to 0.433 mm. in length, averaging approximately 0.375 mm., and ranging from 0.113 mm. to 0.173 mm. in width, averaging approximately 0.144 mm. in width; seminal vesicle, cirrus, and ejaculatory duct tubular, conspicuous, extending posteriorly approximately half the distance to the ovary.

Ovary oval just anterior to the anterior testis, about one-half the size of the posterior testis, varying from 0.12 to 0.20 mm. in length; eggs 55–63 μ x 37–44 μ; just anterior to the ovary the posterior portion of the uterus expanded to form a functional seminal receptacle; yolk reservoir lateral to and between the ovary and seminal receptacle on the right of the midline; uterus continuing forward as a metraterm paralleling the seminal vesicle, and cirrus, uniting with the cirrus at the left posterior margin of the ventral sucker; the common genital atrium opening in the midline just anterior to the acetabulum.

The name *Stephanostomum interruptum* is proposed because of the interruption of one row of oral spines on the ventral side.

The holotype has been deposited in the collection of the U. S. National Museum, U.S.N.M. No. 38302. A paratype has been sent to Dr. H. W. Manter, University of Nebraska; additional paratypes are in the collections of the authors.



— OVER —

Stephanochasmus indicus ~~n. sp.~~ H. D. SRIVASTAVA, 1937

Ex. Intestine Pristis cuspidatus

Loc. Bay of Bengal and the Arabian Sea

"...differs from S. japonicus, which it resembles closely, in the number and arrangement of oral spines, anterior extent of vitellaria, position of gonads and the posterior extent of cirrus sac."

NOMEN SOLEM

Comparsion With Other Species

Stepanostomum interruptum most closely resembles *S. elongatum* Park, 1939 from a Korean fish and *S. cloacum* Srivastava, 1938 from a food fish of India. It is identifiable as *S. elongatum* Park in Manter and Van Cleave's key (1951), but cannot be this species because of the single row of oral spines on the ventral side. The only other described species of *Stephanostomum* with a single row of oral spines ventrally is *S. cloacum*, from which the present species differs in size, number of oral spines, the location of vitellaria, and the position of the testis.

In Table I *Stephanostomum interruptum* is compared with *S. cloacum* and *S. elongatum*.

Table I

Comparison of *S. interruptum* with Closely Related Species.

Characteristic	*S. interruptum*	*S. cloacum*	*S. elongatum*
Number of oral spines	23–24	34	24
Arrangement of oral spines	Two rows dorsally, one row ventrally	Two rows dorsally, one row ventrally	Two rows dorsally and ventrally
Vitellaria	Reaching acetabulum	Reaching part way on seminal vesicle	Reaching acetabulum
Egg size	55–63 μ x 37–44 μ	60–70 μ	60–70 μ
Body length	1.43–3.6 mm.	6.12–8.92 mm.	Much over 1.9 mm.
Testes arrangement	Almost touching to overlapping	Separated by 0.1–0.3 mm.	Well-separated

While examining fish for a study of the geographic distribution of digenetic trematodes in marine fish of the Gulf of Mexico, numerous examples of an undescribed species of *Stephanostomum* have been recovered by the senior author from several species, mostly of the family Sciaenidae, from the Louisiana and Texas coasts. This is the species referred to as an undescribed species in *Stephanostomum* from Grand Isle by Sparks (1957). In a study of the Digenea of Grand Isle, the junior author has recovered several specimens from the same hosts. These flukes were killed with gentle heat under cover glass pressure, and fixed and stained by standard methods. Others were studied alive.

Dr. Harold W. Manter kindly loaned the authors the specimen of *Stephanostomum elongatum* Park mentioned in Hanson's (1950) study of the Digenea of Bermuda.

Stephanostomum japonicum (Yam., 1934) - Acanthocolpidae Manter & Vancleave, 1951

Stephanochasmus japonicus Yamaguti, 1934

(46)

Stephanochasmus japonicus n. sp.

SPECIFIC DIAGNOSIS. *Stephanochasmus* Looss, 1900; with generic characters. Body 2.2–4.4 × 0.45–0.53 mm. Cephalic spines 46, arranged in two alternating rows; aboral spines definitely larger than oral. Oral sucker terminal, 0.11–0.19 × 0.13–0.22 mm. Prepharynx 0.2–0.47 mm long. Pharynx 0.15–0.19 × 0.17 mm. Esophagus short. Ceca lined by cuticle at beginning, terminating at posterior extremity of body. Acetabulum 0.22–0.3 mm in diameter, at posterior end of anterior third of body. Testes subglobular to elongate elliptical, 0.23–0.59 × 0.23–0.34 mm, contiguous, in posterior third of body. Ovary globular to oval, 0.16–0.33 × 0.16–0.23 mm, a little in front of anterior testis. Vitellaria beginning at acetabular level. Eggs not numerous, 0.096–0.126 × 0.066–0.07 mm. Excretory vesicle bifurcating between ovary and anterior testis. Reservoir host *Lotella physis* (Temm. et Schl.).

Habitat. Small and large intestines of *Dasycottus setiger* Bean (type host); pyloric ceca of *Artediellus pacificus* Gilbert; small intestine of *Cottunculus* sp.

Locality and date. Toyama Bay; January 12, 1928; June 20, 1928 (type date); October 25, 1929.

Type and paratypes in my collection.

DISCUSSION. There have been recorded large numbers of *Stephanochasmus* species, but so far as I can determine, my worm resembles *S. casus* Linton, 1910, more closely than any other. In Linton's species, however, the eggs are 0.06–0.085 mm long, while in my worm they are 0.096–0.126 mm in length.

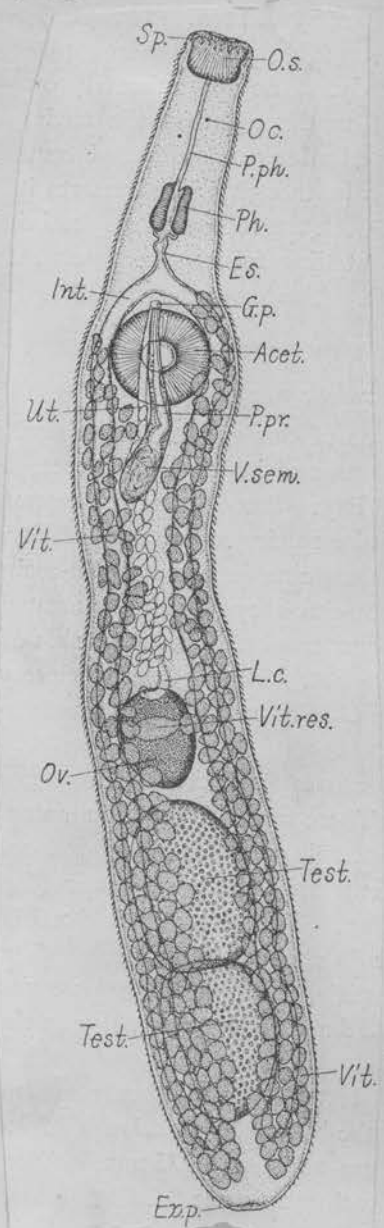


Fig. 59. *Stephanochasmus japonicus*; dorsal view. Type 4.41 × 0.525 mm.

Larvae found encysted in the flesh of Lotella physis

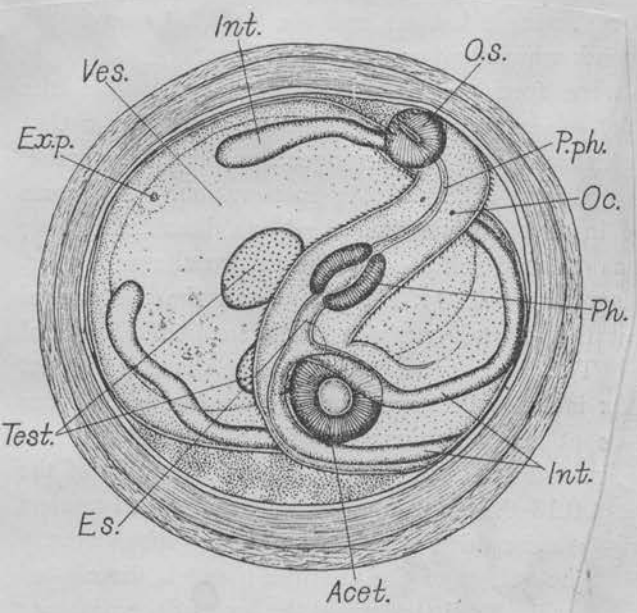


Fig. 61. Encysted larva of *Stephanochasmus japonicus*.

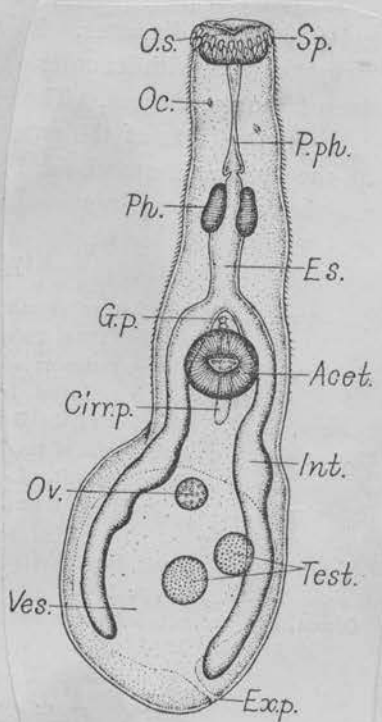
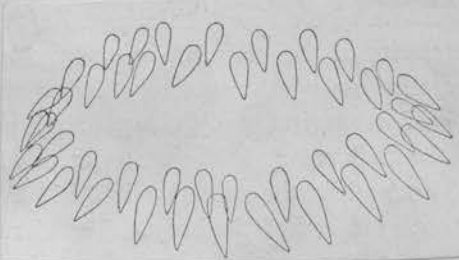


Fig. 62. Larva of *Stephanochasmus japonicus*, liberated from cyst; ventral view.



Acanthocolpidae Lühe, 1909
***Stephanostomum japonocasum* sp. n.**
(Figs. 1–3)

Hosts: *Epinephelus* sp.; Serranidae; "red cod"; type host. Also, an unidentified serranid.

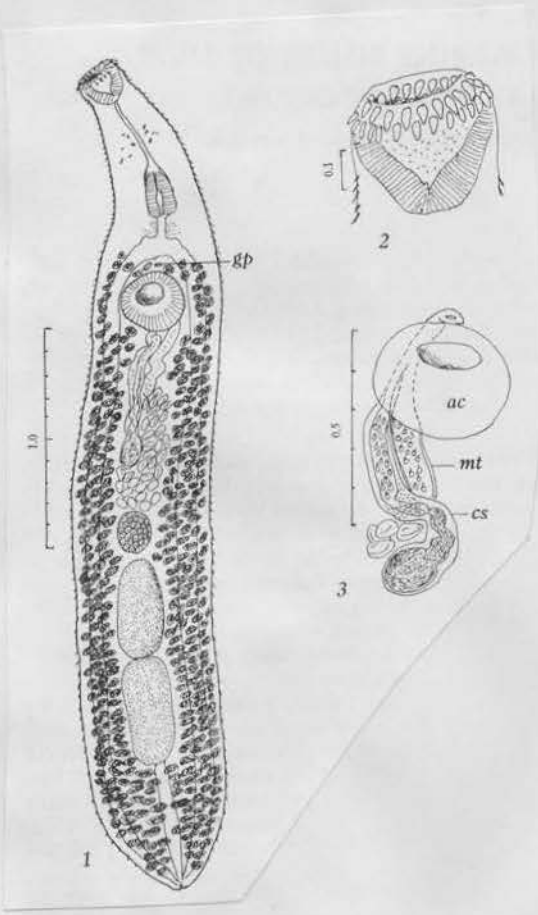
Location: Intestine.

Number: 4; 3 from 1 host.

Holotype: USNM Helm. Coll. No. 63317.

Description: Body elongate, about uniformly wide; length 3.330 to 3.838 mm; width 520 to 560. Forebody slender and tapering, about ⅓ body length, 1.131 to 1.201 mm long. Oral sucker 164 to 205 in diameter, with 40 to 44 spines in 2 rows; largest spines 45 to 53 long. Acetabulum 275 to 340 in diameter. Sucker ratio 1:1.36 to 1.75. Prepharynx 331 to 418 long; pharynx 209 to 221 long, 144 to 152 wide; esophagus about ½ length of pharynx; ceca opening into excretory vesicle near posterior end of body.

Genital pore median, immediately preacetabular.



Testes tandem, contiguous, elongate, about twice as long as wide, in posterior third of body; postesticular space 442 to 583 long. Cirrus sac extending ½ to ⅔ distance between acetabulum and ovary, containing saclike seminal vesicle, short pars prostatica, and spined cirrus; spines with spherical base; cirrus sac joining metraterm dorsal to acetabulum; genital atrium unarmed.

Ovary globular, immediately pretesticular, slightly posterior to midbody. Vitellaria in lateral fields overlapping ceca dorsally and ventrally, from slightly anterior to acetabulum to posterior end of body, confluent at anterior edge of acetabulum and posterior to testes. Uterus preovarian; metraterm about ⅔ length of cirrus sac, armed with spines similar to those of cirrus. Eggs 66 to 76 by 29 to 37. Excretory vesicle extending to posterior testis.

The name *japonocasum* indicates similarity to *S. japonicum* and to *S. casum*.

An abnormally expanded oral sucker gave the single specimen from the second serranid a sucker ratio of only 1:1.23.

Discussion

This species is unusual among the 46 or more species of *Stephanostomum* in having vitellaria extending anterior to the acetabulum. This character occurs in *S. japonicum* (Yamaguti, 1934); *S. carangis* Yamaguti, 1951; *S. pseudocarangis* Sogandares-Bernal, 1959; *S. microstephanum* Manter, 1934; and *S. provitellosum* Sogandares-Bernal, 1959. *Stephanostomum casum* (Linton, 1910) is similar to *S. japonocasum* in many respects although its vitellaria are less extensive, the number of oral spines (36) is fewer, and the metraterm longer. Examination of specimens from Florida shows that a spined metraterm (about same length as the cirrus) is present in *S. casum*, a character not mentioned in descriptions of the species.

Stephanostomum japonocasum differs from *S. japonicum* in having smaller eggs (66 to 76 compared with 96 to 126), and in number of oral spines (40 to 44, compared with 46). No spines were described or figured in either the cirrus or metraterm of *S. japonicum*. *Stephanostomum carangis* has 36 oral spines and unspined metraterm; *S. provitellosum* has interrupted vitellaria, larger oral sucker, and long, unspined metraterm; *S. pseudocarangis* has 36 oral spines, esophagus longer than pharynx, rounded testes, and eggs 51 to 59 long; *S. microstephanum* has 150 oral spines in three rows.

135. *Stephanostomum kawalea* n. sp.

(Fig. 135) Yamaguti, 1970

HABITAT: Intestine of *Sphyraena helleri* (local name "kawalea"); Hawaii.

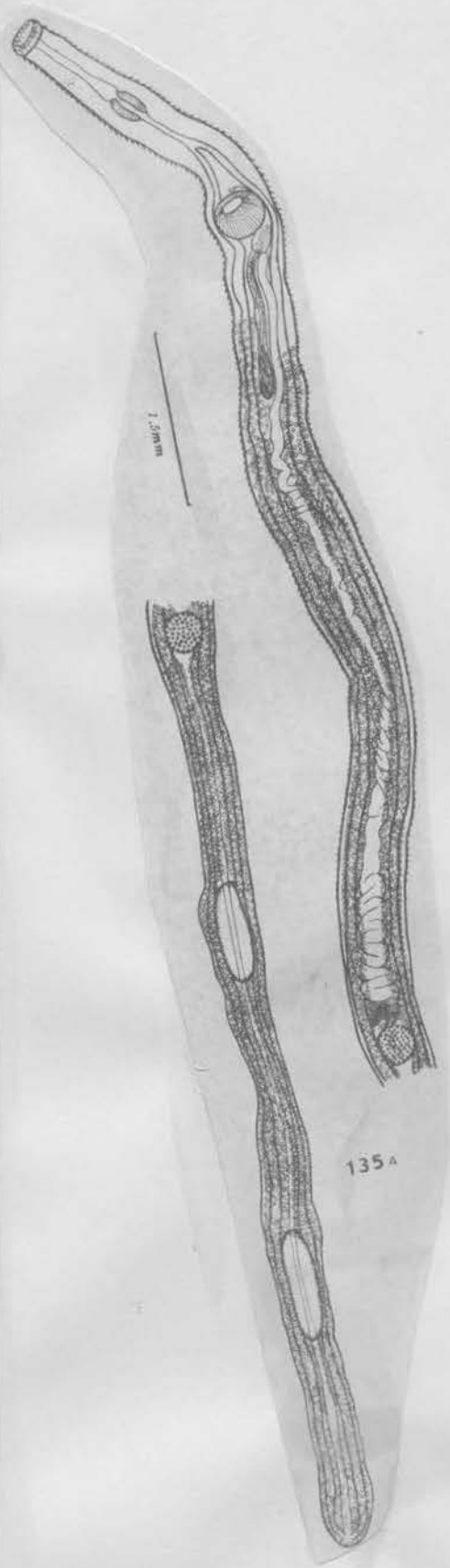
HOLOTYPE: U. S. Nat. Mus. Helm. Coll., No. 63734.

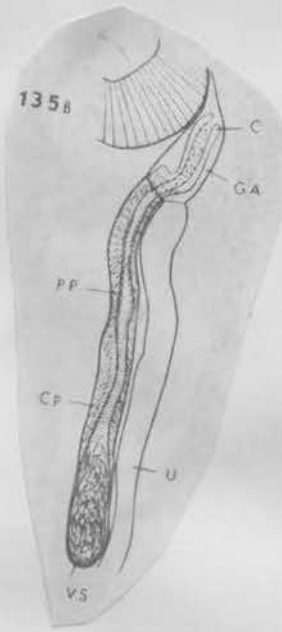
DESCRIPTION (based on two whole mounts): Body slender, very long, 16-19 × 0.57-0.6 mm, tapered anteriorly, oculate. Cuticle spinose on forebody and anterior part of hindbody, but smooth more posteriorly. Oral sucker bowl-shaped, 0.13-0.17 × 0.22-0.32 mm; 40-44 circumoral spines plump, in two alternating rows; midventral spines smallest, 46 × 11 μ; aboral middorsal spines 58 × 14 μ; oral middorsal spines 83 × 16 μ. Prepharynx relatively wide, 0.78-1.27 mm long; pharynx barrel-shaped, 0.23-0.29 × 0.22-0.23 mm; esophagus 0.5-0.77 mm long, bifurcating 0.5-0.8 mm anterior to acetabulum; ceca opening into excretory pore. Acetabulum 0.34-0.37 × 0.39-0.43 mm, situated anterior to middle of anterior third of body.

Testes elliptical to sausage-shaped, 0.8-1.15 × 0.25-0.42 mm, tandem in caudal third of body, well separated (1.7-2.16 mm) one from the other by vitellaria. Cirrus pouch subcylindrical, 1.3-2.0 × 0.11-0.13 mm, extending from behind acetabulum into anterior part of vitellarian zone; seminal vesicle claviform, tapered anteriorly, 0.46-0.8 × 0.1-0.11 mm; pars prostatica tubular, poorly differentiated, surrounded by prostate cells; ejaculatory duct lined distally with acicular spines, projecting in the type into hermaphroditic duct. Hermaphroditic duct thin-walled, unarmed, extending in an arc from a short distance behind acetabulum to genital pore which opens immediately in front of acetabulum.

Ovary ovoid, 0.33 × 0.3-0.32 mm, in posterior half of middle third of body; Laurer's canal opening dorsally near posterior end of ovary. Uterus winding tightly in pre-ovarian intercecal field, then more loosely; metraterm rather poorly developed, extending along entire length of cirrus pouch. Eggs oval, flattened at opercular pole, 72-88 × 46-56 μ in balsam mounts. Vitelline follicles extending along ceca from posterior part of anterior third of body to posterior extremity, commencing at same level or different levels, confluent between ovary and anterior testis as well as between two testes and in posttesticular area; vitelline reservoir dorsal to ovary. Excretory vesicle long, tubular, reaching to ovary; cloaca opening terminally.

DISCUSSION: This species bears a superficial resemblance to *Monorchistephanostomum gracile* Pérez Vigueras, 1942 which was transferred by me (1958) to *Stephanostomum*, from *Sphyraena barrecuda* of Cuba, but because the latter species is based on a single specimen with one testis, I prefer to regard the present species provisionally as distinct until the Cuban species and ours are better described from many more specimens. The specific name is the local name of the host.





From Caballero (1952):

Acanthocolpidae

Stephanostomum lebourae Caballero, 1952.

Sinónimo: *Stephanoschasmus caducus* Looss, 1901, de Lebour, 1908.

(Figs. 97 y 98.)

Tremátodos de 4.400 mm. de largo por 0.340 mm. de ancho; el cuerpo es alargado, plano, con los bordes laterales paralelos, el extremo anterior ancho y redondeado y el posterior ligeramente angosto y poco redondeado; la región peribucal lleva 48 espinas dispuestas en dos hileras de 24 en cada una, sin ninguna interrupción ventral; las espinas de la hilera anterior miden 0.039 mm. de largo y las de la hilera posterior 0.033 mm. de largo; la cuticula está cubierta con pequeñas espinas que son más abundantes en la parte anterior del cuerpo y van disminuyendo a medida que se hacen más posteriores hasta que al final del cuerpo desaparecen.

La ventosa oral es cupuliforme, más grande que el acetábulo, subterminal, musculosa y mide 0.300 mm. de diámetros; el acetábulo es ligeramente menor que la ventosa oral, esférico, intercecal, está situado inmediatamente por detrás del arco bifurcal intestinal y mide de diámetros 0.300 mm. La boca es circular y terminal; existe una larga y angosta prefaringe que mide 0.340 mm. de largo; la faringe es pequeña y piriforme; hay un corto esófago; la bifurcación intestinal se halla por delante del acetábulo, los ciegos intestinales son angostos y se extienden dorsolateralmente hasta el extremo posterior del cuerpo.

98

97

El poro reproductor es pequeño, poco visible, está situado al nivel del borde anterior del acetábulo; el seno genital es corto; los testículos son oblongos, de bordes lisos, están situados en el área intercecal media posterior del cuerpo, próximos al final, uno detrás del otro y separados entre si por un amplio espacio que ocupan folículos vitelinos y miden 0.350 mm. de largo; la bolsa del cirro es larga, tubulosa, sinuosa y angosta y se extiende en el área intercecal media entre el acetábulo y el principio de las glándulas vitelógenas; la vesicula seminal ocupa la porción posterior de la bolsa del cirro, tiene la forma de clava; la glándula prostática es alargada; el cirro es largo y está provisto de una pared armada con espinas, las cuales se disponen en grupos de tres, y cuyas puntas están dirigidas hacia atrás.

El ovario es pequeño, casi esférico, de bordes lisos y está situado en el área intercecal media posterior del cuerpo, por delante del testículo anterior, del cual está separado por un amplio espacio que ocupan abundantes folículos vitelinos; la glándula de Mehlis es dorsal anterior al ovario; conducto de Laurer presente; no hay receptáculo seminal; el útero es corto y está circunscrito al área intercecal preovárica y se extiende hasta el nivel de la parte posterior de la bolsa del cirro, en donde se resuelve en una larga, angosta y recta vagina cuya pa-

FIG. 97. *Stephanostomum lebourae* Caballero, 1952 (= *Stephanochasmus caducus* de Lebour).

FIG. 98. Extremidad cefálica de *Stephanostomum lebourae* Caballero, 1952 (= *Stephanochasmus caducus* de Lebour).

red interna lleva espinas semejantes a las del cirro y se une en su parte anterior a la bolsa del cirro para constituir el seno genital; los huevos no son numerosos y miden 0.080 mm. de largo.

Las glándulas vitelógenas están formadas por abundantes folículos vitelinos que se extienden desde el nivel de la mitad de la vesícula seminal hasta el borde posterior del cuerpo; desde la vesícula seminal hasta el ovario forman dos franjas laterales extra y cecales; rodean lateralmente al ovario y a los testículos y ocupan también los espacios comprendidos entre el ovario y el testículo anterior, entre los dos testículos y el espacio postesticular. El sistema excretor no ha sido observado. Larva y ciclo de vida, desconocidos.

Hospedador: *Gadus merlangus* Linnaeus.
Localización: intestino y ciegos pilóricos
Distribución geográfica: Costa de Northumberland, Islas Británicas, Mar del Norte, Atlántico del Norte.

Discusión. Examinando la descripción y los dibujos del trematodo que M. V. Lebour describió como *Stephanostomum caducum* (Looss, 1901) Manter, 1934, en el año de 1938 encontramos que estos ejemplares no corresponden a la especie de Looss, fundamentalmente por dos caracteres: el número de espinas peribucales y las glándulas vitelógenas no interrumpidas al nivel de los órganos reproductores. También por estos caracteres se distingue la nueva especie que creamos, de las demás del género *Stephanostomum* Looss, 1899 y, aunque hay una remota semejanza con *Stephanostomum ditrematis* (Yamaguti, 1939) Manter, 1947, por la extensión de las vitelógenas, el número de espinas peribucales y el gran tamaño de la bolsa del cirro y de la vagina los separan definitivamente.

La especie ha sido denominada en homenaje a la señorita Marie Victoire Lebour, descubridora del parásito.

Stephanostomum lineatum n. sp.

(Figs. 35-37)

Hosts	Frequency in host	Depth
Læmonema barbatum (Goode & Bean) ..	1 of 13	140 to 197 fath.
Urophycis cirratus (Goode & Bean)	5 8	60 125 fath.
Urophycis regius (Walbaum)	4 8	60 200 fath.

Position—Ceca and intestine.

The degree of infection is usually light, but one specimen of *Urophycis regius* contained hundreds of the trematodes, one of the heaviest trematode infections of any kind found during the present work.

The genus *Stephanostomum* Looss, 1899, was renamed *Stephanochasmus* by Looss in 1900. According to the rules of nomenclature the genus *Stephanostoma* Danielsen, 1880 does not invalidate *Stephanostomum* Looss, 1899, and *Stephanochasmus* must be considered a synonym of *Stephanostomum*. Unfortunately, the genus has become well known as *Stephanochasmus*.

Specific diagnosis

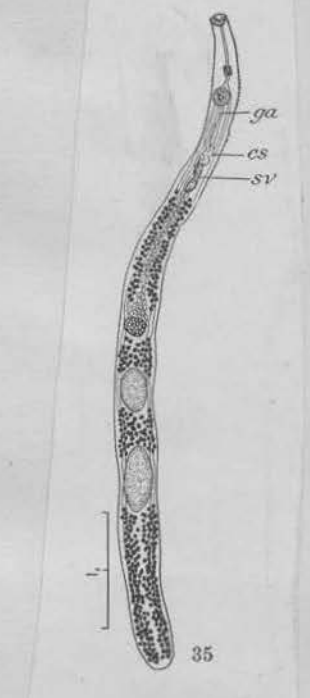
Body elongated, very narrow, filiform, little flattened, almost cylindrical, length 2. to about 7. mm., width 0.126 to 0.37 mm. Ventral sucker far forward, about 1/8 to 1/10 body length from anterior end, always slightly larger than oral sucker. Oral sucker with crown of more or less rhombic spines arranged in three more or less distinct rows (fig. 36). Third (posterior) row of spines better developed in some specimens than in others, sometimes very incomplete, total number of spines 50 to 52. A bare area forming a naked ring around the body immediately posterior to the oral crown. Body spines conspicuous, variable in shape, often pointed needle-like sometimes almost rhombic in shape. Pigment flecks dorsally on forebody. Prepharynx long, usually much longer than pharynx, in contraction only a little longer than pharynx; medium-sized pharynx; distinct but short esophagus; narrow ceca extending to posterior end. Genital pore median, immediately in front of ventral sucker. Genital atrium tubular, spined, extending a short distance posterior to ventral sucker. Cirrus sac long, narrow, sinuous, swollen at base, containing a bipartite seminal vesicle, extending posteriorly almost halfway between ventral sucker and ovary. Cirrus spined. Testes median, tandem, in middle of posterior half of body, elongate-oval to almost round, diameter nearly filling body diameter, separated by vitelline follicles, posterior testis usually larger. Posttesticular space very long, always longer than forebody, 1/4 to 1/5 total body length. Ovary globular, median, about in midbody, separated from anterior testis by vitelline follicles. Uterus preovarian; metraterm spined, sinuous, not quite as long as cirrus sac. Vitelline follicles extending from base of cirrus sac to posterior end of body, interrupted opposite testes and ovary, confluent between these organs, filling post testicular space. Eggs thin-shelled, light yellow, 62 to 66 by 34 to 45 μ.

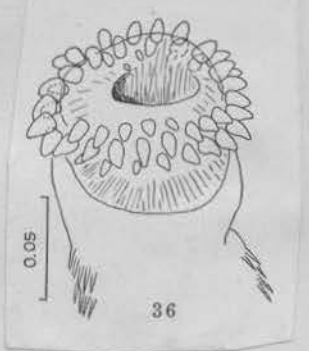
Measurements

Length	Width	Oral sucker	Ventral sucker	Forebody	Posttesticular area	Prepharynx	Eggs
mm.	mm.	mm.	mm.	mm.	mm.	mm.	μ
5.55	0.36	0.11	0.14	0.637	1.32	0.315	64-66 by 40-45
4.72	.37	.112	.16	.52	1.128	.28	64-66 40-45
5.85	.21	.112	.154	.72	1.27	.42	64-66 40-45
6.91	.31	.105	.147	.637	1.45	.322	64-66 40-45
5.46	.126	.105	.14	.455	1.09	.28	64-66 40-45
5.42	.315	.105	.147	.45	1.34	.28	64-66 40-45
4.55	.28	.091	.135	.291	0.855	.14	64-66 40-45
2.36	.24	.084	.114	.38	0.57		

Comparisons

This species is to be compared with *Stephanostomum rhombispinosum* (Lebour) (Synonym: *Stephanochasmus rhombispinosus* Lebour) which is the only species it closely resembles. These two species are alike in their thread-like, elongate, body form, rhombic oral spines, extent and distribution of the vitellaria, extent of the cirrus sac and position of the testes and ovary. *S. rhombispinosum* is from the whiting, *Gadus merlangus*, from European waters. The hosts are therefore related. *S. lineatum* must be considered as distinct, however, because of the following differences: a more or less complete third row of spines, ventral sucker distinctly larger than oral sucker, a constantly much longer posttesticular space and a considerably smaller egg. None of the species of *Stephanostomum* from shallow-water fish of Tortugas shows nearly as close relationship as does *S. rhombispinosum* from distant but cooler waters.





4). *Stephanostomum lopezneyrai* ~~n. sp.~~ Viqueras, 1955

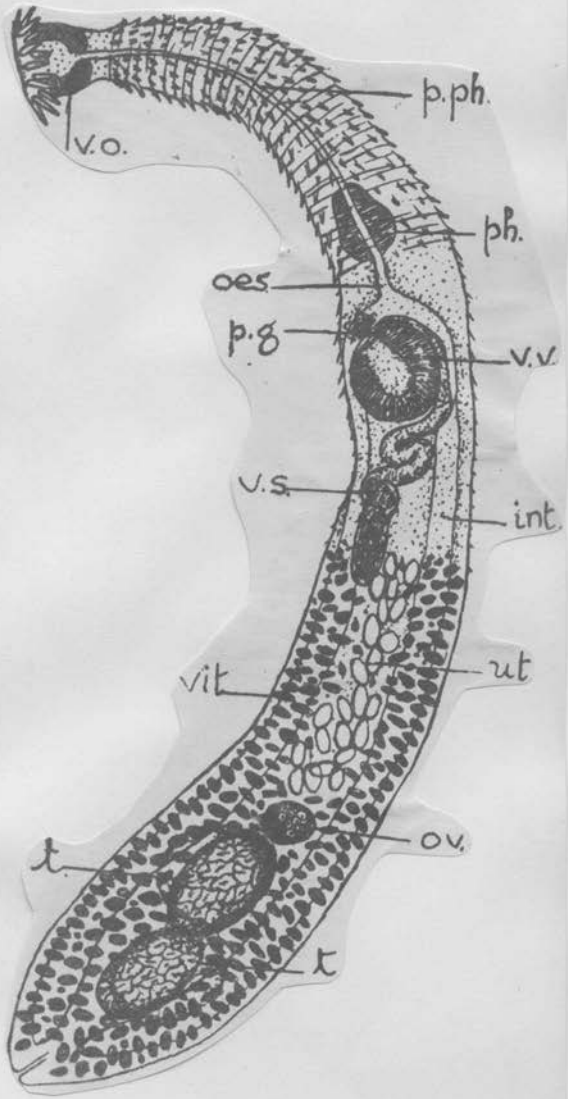
Hospedero : *Anisotremus virginicus* (Linnaeus). N. vulgar : «Catalineta».

Localización : recto.

Localidad : La Chorrera, Habana.

Es un trematode pequeño, de cuerpo alargado y estrecho, deprimido dorso-ventralmente, su parte anterior es atenuada con el extremo truncado, el posterior ligeramente ensanchado y de extremo redondeado, mide 2.9 mm. de largo por 0.32 mm. de ancho máximo. La cutícula presenta abundante espinas puntiagudas grandes, de cerca de 32 micras, las cuales se hacen menos numerosas hacia la parte posterior del cuerpo. La ventosa oral es terminal, campaniforme, musculosa, de 120 por 90 micras, con un orificio oral circular provisto de 26 a 28 espinas dispuestas en doble fila, alternas, no interrumpidas ; las de la fila anterior miden 78 micras y las de la posterior 45 micras. La ventosa ventral es esférica, musculosa, de 160 micras de diámetro y se encuentra a 0.28 mm. del extremo cefálico. La pre-pharynx es larga y delgada, mide 0.43 mm. La pharynx es piriforme, musculosa, prominente, próxima a la bifurcación esofágica, mide 140 por 110 micras. El oesophagus mide 80 micras de largo, se bifurca por delante del poro genital y del acetabulum y los ciegos intestinales se extienden hasta el extremo posterior del cuerpo. Los dos testículos se encuentran hacia el extremo posterior del cuerpo, uno delante del otro, tangentes, alargados, lisos, de aproximadamente igual tamaño, miden 260 por 160 micras. El ovarium es esférico, liso, tangente al testículo anterior, y mide 110 micras de diámetro. La bolsa del cirrus y su vesícula seminal se extienden hasta 1/3 de la distancia entre el acetabulum y el ovarium ; glándulas vitelinas en forma de folículos pequeños distribuídos por las zonas intra y extracecales y parte post-testicular hasta el borde posterior de la vesícula seminal. Huevos relativamente numerosos, casi circulares, amarillo pálidos, de 60 por 46 micras de diámetro y operculados.

Los caracteres específicos de esta especie son : la pre-pharynx larga, la bolsa del cirrus larga, 26 espinas peribucales, espinas cuticulares grandes, testículos y ovarium tangentes, folículos vitelinos extendidos por detrás de la vesícula seminal.



Stephanostomum megacephalum, new species MANTER, 1940
(Plate 41, figs. 71-74)

Host: *Caranx hippos* (Linnaeus)

Location: 6 specimens from the gills, one specimen from the intestine

Localities: Bahia Honda, Panama (type locality)
San Francisco, Ecuador
White Friars, Mexico

Number: 7 specimens from one host, one each from 2 others

SPECIFIC DIAGNOSIS OF STEPHANOSTOMUM MEGACEPHALUM
(Based on 7 specimens)

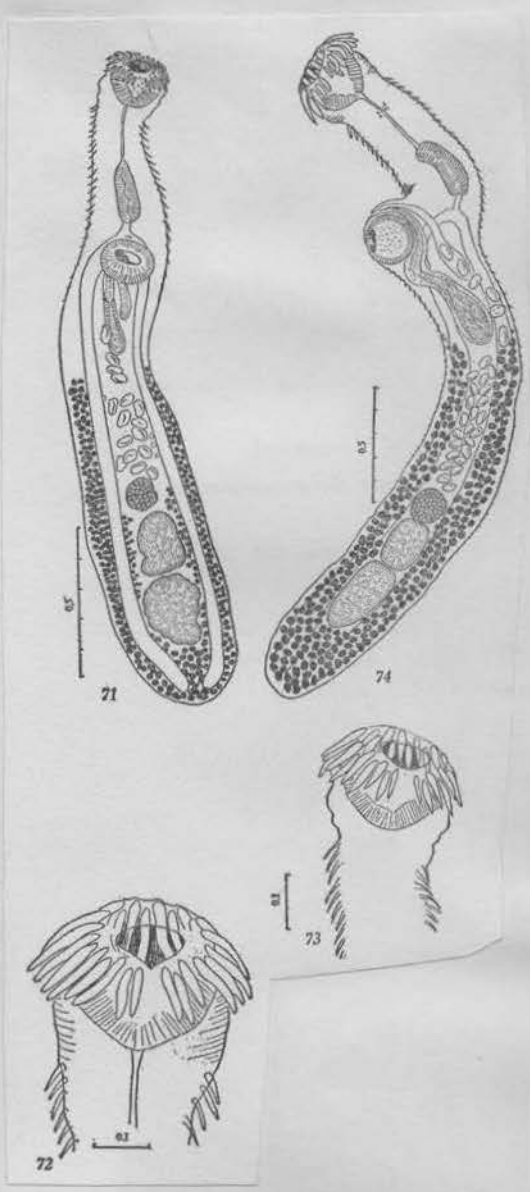
Length 1.431 to 2.212; greatest width 0.375 to 0.465. Forebody ⅓ to ¼ total body length; posttesticular space ⅛ to 1/10 total body length. Oral sucker 0.165 to 0.206 in diameter; acetabulum 0.165 to 0.195 in diameter; sucker ratio varying from about equal to 5:4. Oral spines in two rows, interrupted by a short space in midventral line; 30 to 32 in number, almost always 32. The two pairs of spines immediately adjacent to the midline space are smaller than the others, measuring 0.051 to 0.068 in length by 0.012 to 0.014 in width. The spines reach maximum size laterally and dorsally, measuring 0.085 to 0.100 by 0.015 to 0.019. Immediately posterior to the oral ring and opposite the oral sucker the skin is free of spines. Body spines very large on forebody; spination disappearing a short distance posterior to acetabulum, the posterior half of body apparently smooth. Prepharynx long; pharynx 0.187 to 0.262 in length by 0.088 to 0.114 in width, subcylindrical rather than markedly pyriform; esophagus short. Prepharynx may be less than, equal to, or more than pharynx length, according to state of contraction. Ceca ending close to excretory vesicle with which they may connect (this point not determined). Genital pore median, immediately preacetabular. Testes subglobular, not markedly longer than wide, of slightly irregular contour, close together, intercecal, in posterior fourth of body. Cirrus sac almost straight or bent at level of anterior end of seminal vesicle, extending from ⅓ to ½ the distance from acetabulum to ovary; cirrus spined, extending only slightly posterior to acetabulum; tubular genital atrium from pore to near midacetabular level. Ovary globular, median, closely anterior to anterior testis. Vitellaria from posterior end of cirrus sac to posterior end of body; continuous; dorsal, ventral, and lateral to ceca (follicles may not quite reach cirrus sac or may reach very slightly posterior to its posterior edge); no follicles directly between gonads; metraterm spined, considerably shorter than cirrus sac; eggs 60 to 71 by 32 to 42 μ.

Comparisons. Only two other species of Stephanostomum show the ventral interruption of the oral spines. These are *S. bicoronatum* (Stossich) and *S. cesticillum* (Molin). *S. megacephalum* differs from both in its much smaller size, less extensive anterior extent of the vitellaria, shape of testes, smaller eggs, and shape of pharynx.

The name *megacephalum* refers to the large oral sucker.

Two specimens (figs. 71 and 74) of Stephanostomum from the same host, one from San Francisco, Ecuador, the other from White Friars, Mexico, were thought for a time to represent another species but are included as *S. megacephalum*. They are only slightly larger (up to 3.307); they have a sucker ratio of about 3:2 rather than 5:4; the testes are ovoid and rather definitely longer than wide; the genital atrium is short; the eggs 70 to 76 by 37 to 46 μ; and the oral spines are somewhat larger. Other features such as number and arrangement of oral spines, location of gonads, extent of vitellaria, and extent of cirrus sac are the same. Since the degree of differences is small, it was decided that these specimens could be considered as *S. megacephalum*.

In a collection of Stephanostomum specimens from *Caranx latus* Agassiz at Tortugas, Florida, one specimen, somewhat macerated and not quite complete posteriorly, is identified as *S. megacephalum*. It agrees



FROM: ALLAN HANCOCK PACIFIC EXPEDITIONS, VOL. 2, NO. 14

Stephanostomum megacephalum Manter, 1940
Host: *Caranx hippos*
Site: intestine
Locality: Alligator Harbor

APALACHEE BAY, GULF OF MEXICO
FROM NAHHAS AND SHORT, 1965

Stephanostomum megacephalum Manter, 1940
Host: *Caranx latus* (J).
Site: intestine.

JAMAICA; FROM NAHHAS + CABLE, 1964

Stephanostomum megacephalum Manter, 1940
Host: *Caranx hippos*
Site: Intestine
Locality: Santa Rosa Sound

Pensacola Bay, Florida (N. Gulf of Mexico)
Nahhas and Powell (1971)

Stephanostomum megacephalum
Manter, 1940

HOSTS: *Caranx hippos* (L.), jack or horse mackerel (Carangidae); *Myxus curvidens* (Valenciennes), mullet (Mugilidae).

HABITAT: Small intestine.

LOCALITIES: Cape Coast (*Caranx*), Tema (*Myxus*); Ghana.

DATE: 27 April 1966 (*Caranx*).

SPECIMENS: USNM Helm. Coll. No. 63332 (from *Caranx*); No. 63333 (*Myxus*).

DISCUSSION: Our specimens readily keyed to *S. megacephalum* in the keys given by Manter and Van Cleave (1951) and Caballero (1952). This species has been reported from *Caranx hippos* from the Pacific coast of Mexico, Panama and Ecuador, and from the Gulf of Mexico (Florida); it has also been found in *C. latus* Agassiz from Tortugas (Florida) and Jamaica (West Indies). Our collection consists of four adults and one immature specimen, with 28–30 circumoral spines, from one *C. hippos*, and four adults, with 31–32 spines, from one *M. curvidens*. The circumoral spines in specimens from the latter host average smaller (46–75 by 7–11) than those originally described; we believe this to be host influenced.

From: Fischthal & Thomas 1968

Stephanostomum megacephalum
Manter, 1940
Host: *Caranx hippos* (2 of 3).
Site: Rectum. Overstreet, 1969

/7). *Stephanostomum microcephalum* n. sp. Fig. 8.
Hospedero : *Elagatis bipinnulatus* (Quoy y Gaimard). Nombre vulgar : «Salmón criollo».
Localización : Intestinos.
Localidad : Litoral Norte de la Habana.

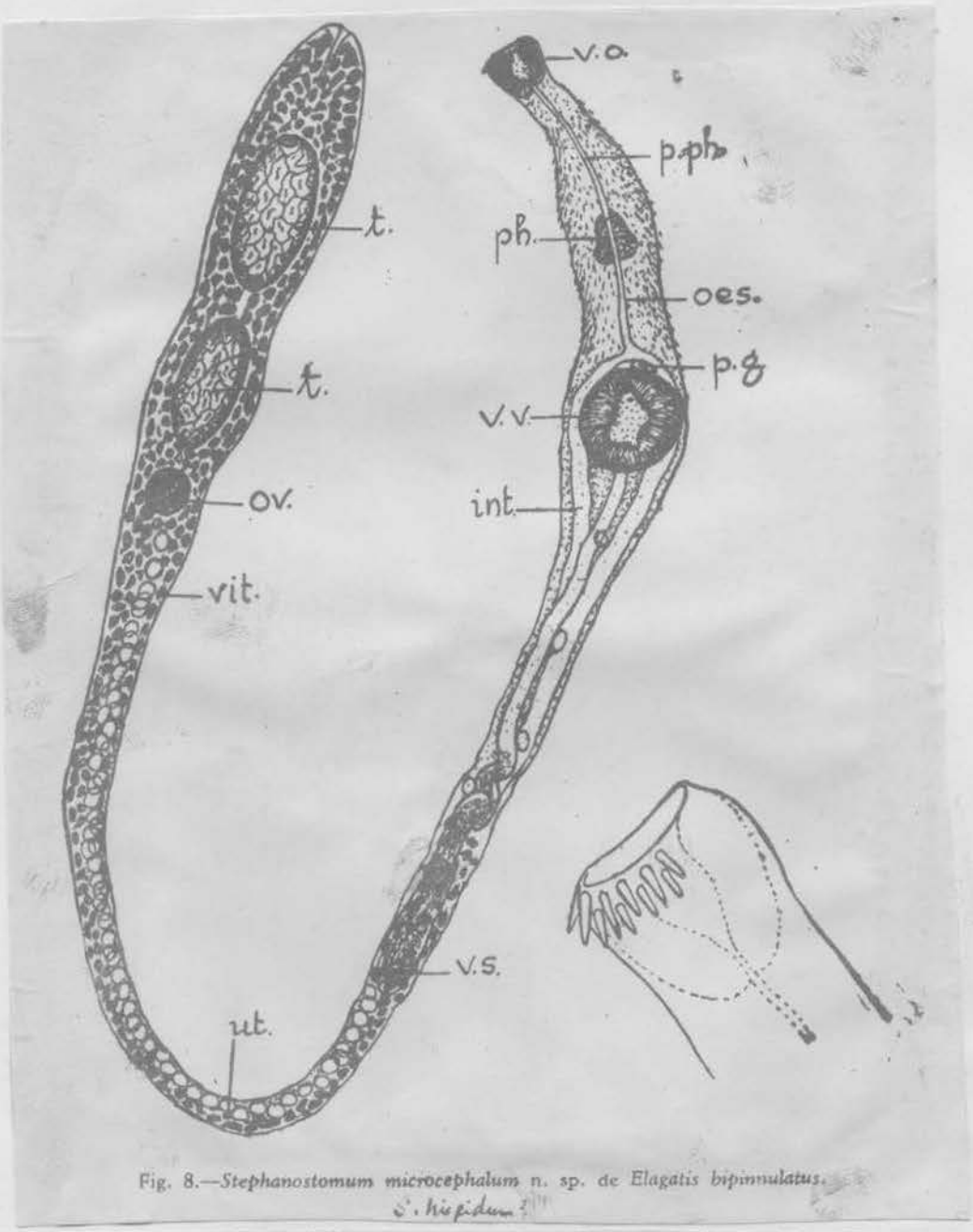


Fig. 8.—*Stephanostomum microcephalum* n. sp. de *Elagatis bipinnulatus*.
S. hispidum ?

SOCKANARES (1959)

States this species agrees in morphological detail with both S. Ditrematis and S. Hispidum. True identity awaits study of peribuccal spines of holotype.

Descripción.—El cuerpo es alargado, estrecho, algo ensanchado a nivel de los testículos y del acetabulum, su extremo anterior a partir del acetabulum se atenúa marcadamente, el largo del cuerpo es de 10 mm., su ancho máximo es de 0.48 mm. La cutícula presenta en el segmento posterior a la ventosa oral, pequeñas espinas densamente distribuídas, y después se observan espinas largas y gruesas que se extienden hasta el nivel del acetabulum. Ventosa oral cupuliforme, terminal, musculosa, de 165 micras de ancho por 120 micras de largo ; pre-pharynx larga,

de 0.46 micras de largo ; pharynx piriforme, musculosa, de 156 por 100 micras ; oesophagus de 220 micras de largo, se bifurca al nivel del borde anterior del acetabulum ; los ciegos intestinales transcurren por ambos lados del cuerpo hasta el extremo caudal del parásito. Las coronas de espinas peri-bucales están dispuestas en doble fila alternas, pequeñas, pues sólo alcanzan unas 33 micras, pero su número no se ha podido determinar porque faltan en su gran mayoría por haberse caído. La ventosa ventral se encuentra a 0.96 mm. del extremo cefálico del verme, es globulosa grande, musculosa, mide 300 micras de largo por 260 micras de ancho.

El sistema reproductor consta de dos testículos alargados, grandes, lisos, colocado uno delante del otro, muy próximos al extremo caudal y ligeramente separado uno de otro con una zona estrecha libre de vitellaria ; el anterior mide 623 micras de largo por 268 micras de ancho máximo ; el posterior 650 micras de largo por 335 micras de ancho. El poro genital se encuentra inmediatamente por delante del acetabulum y por detrás de la bifurcación esofágica ; la bolsa del cirrus con su vesícula seminal es tubular, muy larga, mide 1.6 mm., la vesícula seminal se ensancha y forma varias vueltas. El ovarium es pre-testicular, bastante distante del testículo anterior y separado del extremo anterior de éste por abundante vitellaria, es ligeramente alargado, liso, mide 167 por 134 micras. El úterus es muy desarrollado, ocupa un espacio entre el acetabulum y el extermo anterior del ovarium que mide 5 mm. de largo y contiene abundantes huevos. Las glándulas vitelinas en forma de folículos redondeados irregulares de unos 33 a 40 micras de diámero, muy numerosos, distribuídos desde la mitad posterior de la vesícula seminal hasta el extremo caudal del cuerpo del parásito, ocupando toda la zona pre-ovariana, inter-ovario-testicular, post-testicular, y acumulándose principalmente hacia las bandas laterales del cuerpo. Los huevos, muy numerosos, casi circulares, miden unas 53 × 40 micras, son de color amarillo-pálido y operculados.

El *Stephanostomum microcephalum* n. sp. ofrece semejanza con el *Stephanostomum ditrematis* (Yamaguti) 1939, pero en éste los folículos vitelinos se extienden hasta por detrás del borde posterior de la vesícula seminal, los testículos son de la mitad del tamaño y la relación entre las ventosas oral y ventral es menor que en aquella especie. También se parece al *Stephanostomum robustum* (Mac Callum) 1917, del cual puede diferenciarse por la altura del nivel anterior de los folículos vitelinos, la distancia del acetabulum a su extremo cefálico y la falta de folículos vitelinos entre el ovarium y el testículo anterior

Stephanostomum microstephanum Manter, 1934

(Figs. 38-41)

Host—*Epinephelus mystacinus*.
Position—Intestine.
Frequency—Two specimens in 1 of 3 hosts examined.
Depth—90 fathoms.

Specific diagnosis

Length of mature specimen 2.09 mm., greatest width 0.520 mm. (about at midbody). Body flattened, rounded at ends. Oral sucker fairly large, terminal, directed forward. Ventral sucker just in front of midbody, smaller than oral sucker (ratio about 3:4). Oral sucker with a crown of three rows of oral spines much reduced in size, somewhat irregular in shape, not sharply pointed, easily lost, total number at least 150, maximum size 10 by 6 μ (fig. 39). Behind the oral crown there is a short space free of spines, followed by the spined region of the body. Body spines either scale-like and easily shed, or sharply pointed, extending to near the posterior end. Pigment flecks (or, in young, distinct eye spots) dorsally, shortly behind oral sucker. Prepharynx long, somewhat expanded posteriorly, pharynx pyriform, widest posteriorly, only slightly shorter than prepharynx; very short esophagus, intestinal bifurcation about 2/3 the distance between oral and ventral suckers; broad ceca extending to posterior end of body. Genital pore median, immediately anterior to ventral sucker. Genital sinus very short, cirrus sac elongate-oval, extending a short distance posterior to ventral sucker, containing a bipartite seminal vesicle in its posterior third, a fairly well-developed prostate gland and long cirrus with long, narrow spines (fig. 40). Testes large, median, tandem, rounded, in posterior third of body, not far apart, separated by a few vitelline follicles especially dorsally, posttesticular space short, about the length of testis diameter. Ovary ovoid, smooth, transversely extended, immediately in front of anterior testis, not far posterior to midbody. Uterus preovarian, intercecal, metraterm not conspicuous, a little shorter than cirrus sac. Eggs fairly large, thin-shelled, 62 to 70 by 41 to 43 μ. Vitellaria extending from immediately behind the intestinal bifurcation to the posterior end of the body, largely cecal, dorsal and ventral, confluent anterior to ventral sucker, dorsally between the testes and behind the testes. Excretory vesicle forking between the testes, two narrow crura extending into anterior end. In the postacetabular area these crura are intercecal.

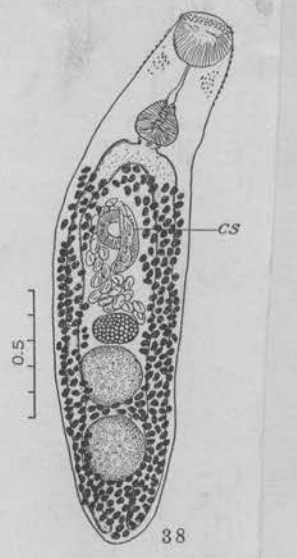
Measurements

Length	Width	Oral sucker	Ventral sucker	Fore-body	Pre-pharynx	Pharynx	Cirrus sac	Eggs
mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	μ
2.090	0.520	0.230	0.190	0.814	0.172	0.168	0.213	70 by 43
1.440	.395	.226	.154	.588	.156	.147		62 41

Comparisons

There is no other species of *Stephanostomum* very similar to this form. One of the most characteristic features, the three rows of oral spines, as well as the rhomboid shape of these spines is shared by *S. lineatum*, another species from deep-water fish. These spines in *S. lineatum*, however, are much larger and much fewer in number. Furthermore, *S. lineatum* is consequently in body proportions, length of posttesticular space, length of esophagus, distribution of vitellaria and length of genital sinus. No other species of *Stephanostomum* possesses nearly as many oral spines, 56 in *S. baccatus* is the nearest—a number about 1/3 the number present in *S. microstephanum*. In no other species of *Stephanostomum* do the vitellaria extend anterior to the ventral sucker and become confluent there. The very short genital sinus or atrium is not characteristic for the genus. In fact, these differences might well be sufficient to identify a new genus. At present the species is referred to *Stephanostomum*, with its nearest (yet distant) relative *S. lineatum*.

The fact that the oral spines are so much reduced and so easily lost, suggests a comparison with related genera lacking the oral crown. The body form and vitellaria are somewhat like *Acanthopsolus* but this genus possesses a sac-shaped excretory vesicle (at least, supposedly), diagonal testes, much larger eggs and smaller oral sucker (as well as lacking oral spines). Poche (1926) named the genus *Tormopsolus* for the *Distomum osculatum* of Looss (1901). This species seems to be so much like *Stephanostomum* (especially *S. caducus* Looss, 1901) that it seems probable that its oral spines had become accidentally lost. It is entirely unlike the present species in body form, sucker position and ratio, extent of vitellaria, and in other characters.



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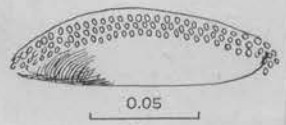

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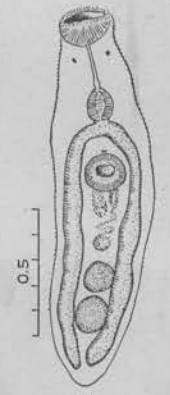

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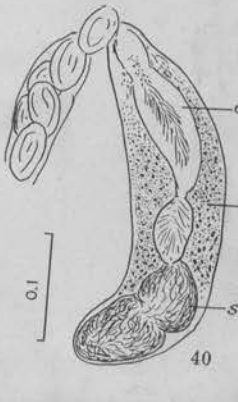


40

STEPHANOSTOMUM MICROSTEPHANUM MANTER, 1934 Acanthocolpidae

SYN: PEREZ-VIGUERAS, 1955

8). *Stephanostomum admicrostephanum* ~~n. sp.~~ Fig. 9.

Hospedero: *Epinephelus mystacinus* (Poey). Nombre vulgar: «Cherna de lo alto».

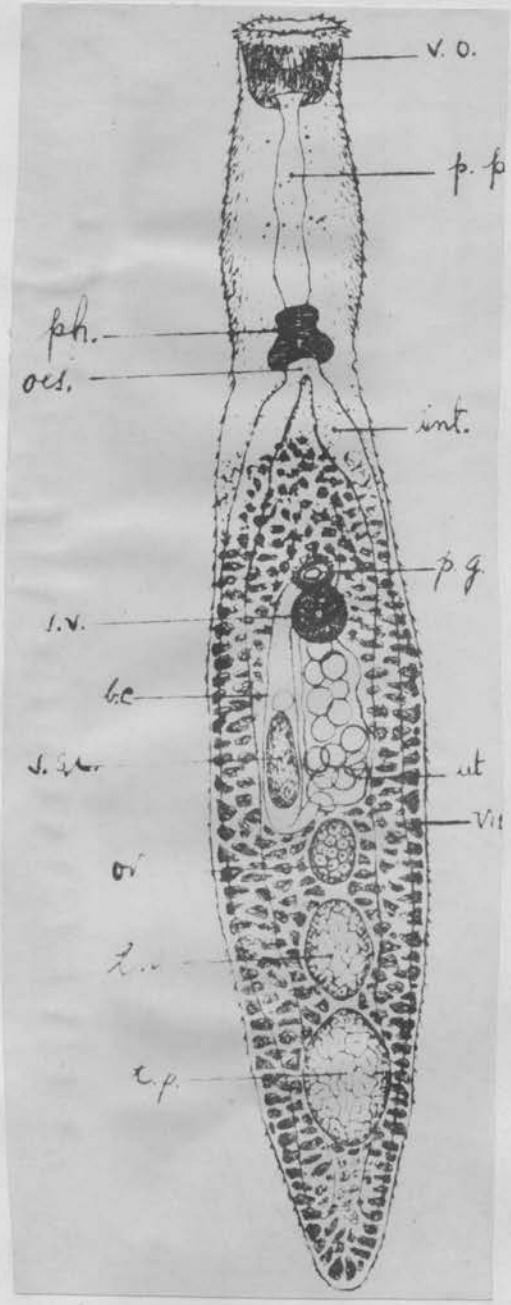
Localización: Intestinos.

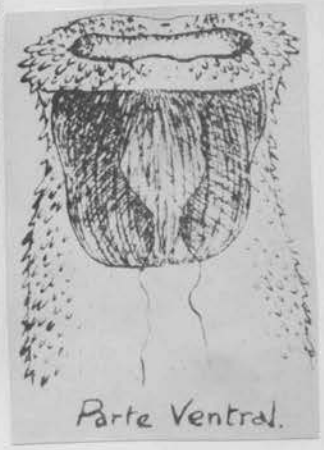
Localidad: Litoral Norte de la Habana.

Descripción.—El cuerpo es alargado y deprimido dorso-ventralmente, ligeramente ensanchado hacia su parte media, con el extremo anterior truncado, el posterior ligeramente atenuado en punta. Mide 5.5 mm. de largo por 1.1 mm. de ancho máximo, la cutícula presenta fuertes espinas distribuídas más densamente hacia el tercio anterior del cuerpo, haciéndose raras y más pequeñas hacia la línea media. Ventosa oral cupuliforme, musculosa, más ancha que larga, midiendo 335 micras de largo por unas 165 micras de ancho; su pared interna está recubierta de numerosas y pequeñas espinas romas, su borde oral presenta un reborde provisto de tres filas de espinas cortas y gruesas, en posición irregular, interrumpidas por un espacio dorsal y otro ventral desprovisto de las espinas peri-bucales. Las espinas peri-bucales son alrededor de 70 a 80. La ventosa ventral es pequeña, circular, más pequeña que la ventosa oral, mide 200 micras de diámetro, está situada a 1.7 mm. del extremo cefálico. La prepharynx es larga y gruesa, mide 0.04 mm. de largo; la pharynx es campaniforme, musculosa, mide 200 micras de largo por 221 micras de ancho máximo; el oesophagus es muy corto y se bifurca inmediatamente a media distancia entre el acetabulum y el extremo cefálico del verme, formando dos intestinos ciegos, laterales, que se extienden justamente hasta el extremo caudal del cuerpo del parásito.

El sistema reproductor consta de dos testículos grandes, ovalados, colocados uno detrás del otro y muy próximos al extremo caudal, el anterior mide 402 micras de largo por 270 micras de ancho, el posterior tiene 560 micras de largo por 338 micras de ancho, son lisos, post-ovarianos, medianos. El ovarium es pretesticular, ovalado, liso, mediano, post-ecuatorial, situado a corta distancia del testículo anterior, mide 270 micras de largo por 200 micras de ancho. El poro genital se abre inmediatamente por delante del acetabulum, distante de la bifurcación esofágica; bolsa del cirrus tubular; cirrus espinoso; vesícula seminal interna. Glándulas vitelinas en forma de folículos de unas 50 a 60 micras de tamaño, muy numerosos, distribuídos desde cerca de la bifurcación esofágica, por delante del acetabulum, hasta el extremo posterior del cuerpo, uniformemente desde el borde hacia el centro del cuerpo, sin intercalarse entre el ovarium y el testículo anterior, ni entre ambos testículos. Utero pequeño, entre el acetabulum y el ovarium, con escasos huevos. Huevos casi circulares, operculados, de cáscara delgada y de 60 por 53 micras.

Esta especie se parece al *Stephanostomum microstephanum* Manter 1934, pero se distingue de ésta por el número y disposición de las espinas peri-bucales, la separación entre la bifurcación esofágica y el acetabulum y la relación entre las ventosas oral y ventral que es de 4 : 3 en la primera y 3 : 2 en lasegunda.




Parte Ventral.


Parte dorsal.

AUTHORITY FOR SYNONYMY: SOGANDARES (1959)

Stephanostomum minutum (Looss, 1901) Manter, 1940

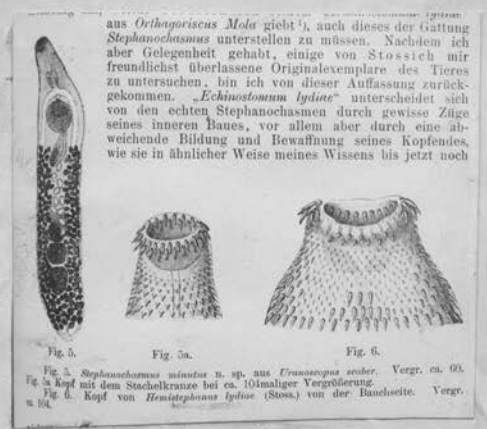
Stephanochasmus minutus ~~Odhner~~ Looss 1901

(36)

Differs from most other species in that the three gonads are close together in the hind part of the body.
Length of largest specimen 1.9 mm, others from 1.2 mm.
In contrast with S. pristis and caducus the hind part of the body is wider than the fore part.
Oral sucker with a double row of 36 spines, ventrally uninterrupted and smaller than dorsally.
Spines in both rows of about equal size (38 u average) the points of the posterior row therefore extending back of the points of the anterior row.
Oral sucker only a little over ½ the size of ventral sucker
Pharynx powerful as long as the oral sucker is wide.
Cirrus sac extending less than ½ the distance between ventral sucker and ovary
Gonads close together in hind body, not separated by vitellaria
Vitellaria unbroken from hind end to ½ the length of cirrus sac.
Eggs 47 by 36 u.

Host: Uranoscopus scaber

Mediterranean



aus *Orthagoriscus Mola* giebt[1]), auch dieses der Gattung *Stephanochasmus* unterstellen zu müssen. Nachdem ich aber Gelegenheit gehabt, einige von Stossich mir freundlichst überlassene Originalexemplare des Tieres zu untersuchen, bin ich von dieser Auffassung zurückgekommen. „*Echinostomum lydiae*" unterscheidet sich von den echten Stephanochasmen durch gewisse Züge seines inneren Baues, vor allem aber durch eine abweichende Bildung und Bewaffnung seines Kopfendes, wie sie in ähnlicher Weise meines Wissens bis jetzt noch

Fig. 5. Fig. 5a. Fig. 6.

Fig. 5. *Stephanochasmus minutus* n. sp. aus *Uranoscopus scaber*. Vergr. ca. 60.
Fig. 5a Kopf mit dem Stachelkranze bei ca. 104maliger Vergrößerung.
Fig. 6. Kopf von *Hemistephanus lydiae* (Stoss.) von der Bauchseite. Vergr. a. 104.

FROM LOOSS, 1901. SEE REPRINT.

Stephanostomum minutum (Looss, 1901) Manter, 1940

Host.—*Malacanthus plumieri* (Bloch), sandfish [new host record].

Location.—Rectum.

Locality.—Between S. Bimini and Cat Cay, B.W.I. [new locality record].

Discussion.—Caballero (1952) considered *S. sentum* (Linton, 1910) Manter, 1947 a synonym of *S. minutum*. I do not agree with such synonymy because *S. minutum* is fully mature at a much smaller size than *S. sentum* from the same host. The host from which *S. minutum* is reported in this paper also possessed two immature specimens of what I have considered *S. sentum*. These immature specimens of *S. sentum* are approximately twice the size of the fully mature *S. minutum*. In addition, the oral spines of *S. minutum* are more delicate than those of *S. sentum*. I prefer to retain *S. minutum* at least until life cycles of the two species are studied. Morphological differences may be found in the cercariae of the two species.

Syn: S. sentus at Tor

Sogandares, 1959

Stephanostomum multispinosum, ~~new species~~ MANTER, 1940

(Plate 41, figs. 77, 78)

Hosts: *Mycteroperca olfax* (Jenyns) (type host)
Mycteroperca sp. (perhaps *olfax*)

Location: Intestine

Locality: Albemarle Island, Galapagos (type locality)
Clarion Island, Mexico

Number: 2 specimens only were collected, one from Albemarle Island (in *M. olfax*), one from Clarion Island (in Mycteroperca sp.)

The following specific diagnosis is based on these two specimens.

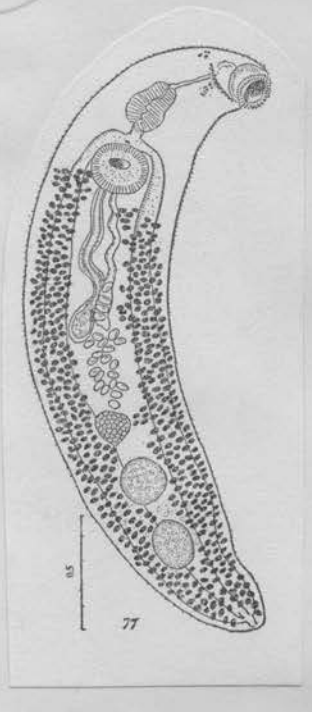
SPECIFIC DIAGNOSIS OF STEPHANOSTOMUM MULTISPINOSUM

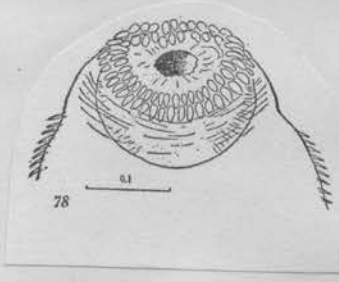
Length 2.754 to 2.929; width 0.615 to 0.787; forebody 0.570 to 0.675 or a little less than ⅕ body length. Posttesticular distance 0.412 to 0.427 or about 1/7 total body length. Oral sucker 0.180 to 0.187 in diameter; acetabulum 0.247 to 0.250 in diameter; sucker ratio about 3:4. Oral spines small, very numerous, in two rows, not sharply pointed; 38 to 40 pairs or a total of approximately 80 (the number may be the same in both specimens, but accuracy in counting cannot be certain along the sides where the spines overlap several times); largest spines about 0.027 by 0.012; smallest spines about 0.017 by 0.007. Body spination extending to posterior end but denser anteriorly. Prepharynx not much longer than pharynx (shorter when forebody contracted); pharynx 0.195 to 0.228 long by 0.180 to 0.187 wide; distinctly pyriform; esophagus short; ceca obviously opening into excretory vesicle. Genital pore median close in front of acetabulum. Testes rounded, tandem, in posterior ½ to ⅓ of body; not markedly longer than wide, largely intercecal but partly overlapping the ceca ventrally; separated by a short distance which is not occupied by vitellaria except dorsally; cirrus sac sinuous, very long, reaching more than halfway between acetabulum and ovary, cirrus very long, reaching almost halfway to ovary; seminal vesicle in basal fourth or fifth of sac; genital atrium tubular, opposite anterior half of acetabulum. Ovary globular to subtriangular, not elongated, separated from anterior testis by a short space not occupied by vitellaria; vitellaria from posterior fourth or posterior edge of acetabulum to posterior end of body; continuous; not covering uterus; dorsal, ventral, and lateral to ceca but not entering between gonads except dorsally; eggs 68 to 82 by 38 to 44 μ, usually about 71 to 73 by 41 to 42 μ; metraterm narrow, sinuous, almost as long as cirrus sac, and extending more than halfway to the ovary.

The name *multispinosum* refers to the large number of oral spines.

Comparisons. No other species of Stephanostomum has nearly so many oral spines as *S. multispinosum* with the exception of *S. microstephanum* and *S. tristephanum,* both of which have 3 rows instead of 2. The oral spines, furthermore, are smaller than in other species.

80±





FROM: ALLAN HANCOCK PACIFIC EXPEDITIONS, VOL. 2, No. 14.

Stephanostomum naucrotis ~~n. sp.~~ Nagaty, 1957
(Figs. 4–5)

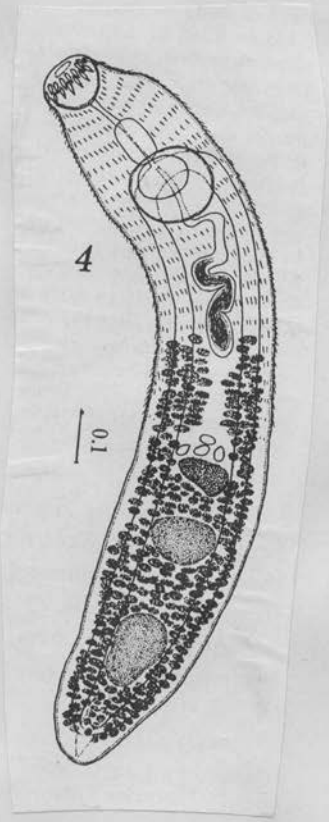
Description (Based on 2 specimens): Body elongated with parallel sides; cuticle with spines that decrease in size and number towards the posterior half of body; length 1.387 to 1.789; greatest width 0.217 to 0.256; acetabulum larger than oral sucker, 0.123 to 0.14 in diameter, at posterior part of anterior fourth of body length. Oral sucker 0.088 to 0.105 in diameter, with a double row of 32 wedge-shaped spines that are of about equal length of 0.035. Prepharynx relatively short; pharynx well developed, elongated, 0.105 to 0.049 in diameter; esophagus very short; intestinal bifurcation at anterior border of acetabulum; ceca join excretory vesicle to form a cloaca.

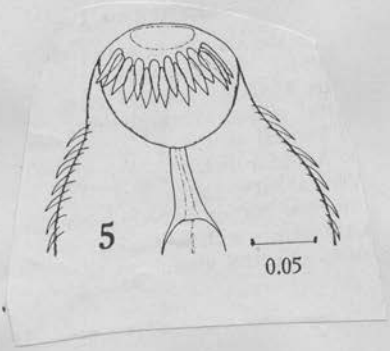
Testes 2, spheroid or slightly elongated, separated by about the diameter of 1 testis, at posterior third of body length; cirrus sac sinuous, about 1/3 or more of total body length; extending not quite to midbody and about ½ distance between acetabulum and ovary; internal seminal vesicle about half length of cirrus sac; genital pore median at anterior border of acetabulum. Ovary spheroid or slightly elongated, pretesticular, at posterior part of middle third of body and separated from anterior testis by about diameter of ovary. Vitellaria extending from posterior end of body laterally and between the gonads to level of posterior end of cirrus sac. Uterus with comparatively few eggs, 0.053 by 0.035.

Host: Naucrotes ductor, locally called "Hash-sha".

Locality: Ghardaga

Discussion: This species is nearest to *S. ditrematis* (Yamaguti, 1939) Manter, 1947 to which it keys in Caballero's (1952) key. It differs in its much smaller size; 32 rather than 36–40 oral spines; shorter prepharynx; and smaller eggs.





133. *Stephanostomum nunu* n. sp.

(Fig. 133) Yamaguti, 1970

HABITAT: Intestine of *Aulostomus chinensis* (local name "nunu"); Hawaii.

HOLOTYPE: U. S. Nat. Mus. Helm. Coll., No. 63732.

DESCRIPTION (based on three whole mounts): Body elongate, enlarged posteriorly, 2.5-3.0 mm long, up to 0.4-0.56 mm wide at level of testes. Forebody attenuated in neck region, spined as usual; spines up to 23 μ long. Eyespots compact. Oral sucker saucer-shaped or rhomboid, 0.11-0.12 X 0.19-0.24 mm; circumoral spines 39-40, in two alternate rows; middorsal oral spines about 46 μ long, with truncate base; middorsal aboral spines fusiform, of nearly same length; ventral oral spines 37 μ long; ventral aboral spines a little shorter. Prepharynx narrow, 0.27-0.36 mm long; pharynx elongate pyriform to subcylindrical, 0.18-0.2 X 0.07-0.08 mm; esophagus very short, bifurcating immediately in front of acetabulum; ceca terminating blindly at extreme posterior end of body. Acetabulum 0.18-0.2 mm in diameter, situated at or near posterior end of anterior third of body.

Testes oval to elliptical, 0.35-0.4 X 0.15-0.3 mm, directly tandem close to posterior extremity, confined to posterior third of body. Cirrus pouch elongated claviform, 0.4-0.8 X 0.1-0.12 mm, extending backward well into middle third of body, reaching to near ovary in the type; pars prostatica tubular, 93 X 28 μ in the type, surrounded by prostate cells; ejaculatory duct 420 X 46 μ in the type, densely covered inside with stunted spiniform structure; hermaphroditic duct 0.3 mm long in the type, provided with long or short acicular spines at its proximal end, where the ejaculatory duct projects into the lumen, but apparently smooth distally. Genital pore median, immediately pre-acetabular.

Ovary subglobular, 0.12-0.14 X 0.11-0.18 mm, contiguous with anterior testis, a little to right of median line, just at junction of middle with posterior third of body. Germiduct arising from middorsal surface of ovary, running arcuately toward left end of ovary, where it gives off the Laurer's canal, and then uniting with vitelline duct; it runs further sinistrad and turns back on itself to lead into the ootype which lies anterosinistral to the ovary. Laurer's canal opening, after sigmoid backward course, in median line dorsal to anterior part of anterior testis. Uterus coiled in pre-ovarian field; metraterm long, spined, commencing a little anterior to base of cirrus pouch, running along left side of cirrus pouch. Eggs oval, longitudinally ridged, 60-68 X 25-28 μ in life, collapsed mounted eggs 58-70 μ long by 37 μ wide. Vitellaria commencing on each side a little behind acetabulum, extending medially and more or less overlapping cirrus pouch, ovary, and testes, almost confluent behind posterior testis; vitelline reservoir anterodorsal to anterior testis. Excretory vesicle reaching to ovary; pore terminal.

DISCUSSION: This species differs from *Stephanostomum anisotremi* Manter, 1940, which has 38-40 oral spines and is from *Anisotremus scapularis* of Galapagos, in the location of the gonads and of the posterior end of the cirrus pouch relative to the anterior end of the vitellaria, and differs distinctly from other related members such as *S. aulostomi* Nahhas et Cable, 1964, from *Aulostomus maculatus*, *S. australe* Manter, 1954 from *Chelidonichthys kumu* of New Zealand and *S. sentum* (Linton, 1910) from *Calamus* and *Haemulon* of Florida in the number or size of the circumoral spines, and in lacking a uroproct.

Taking this opportunity, I would like to point out that the circumoral spines of *Stephanostomum* are fairly constant in number specifically and that the ecological host-parasite relationships are important in discussing synonymy of closely related species. In this connection it seems certain that Siddiqi and Cable (1960) neglected these points, in addition to the presence or absence of a cloaca, in their comparison of *Stephanostomum dentatum* (Linton, 1901) and *S. pagrosomi* (Yamaguti, 1939).

16. *Echinostephanus pacificus* n. sp.
Pl. IV, Fig. 11.

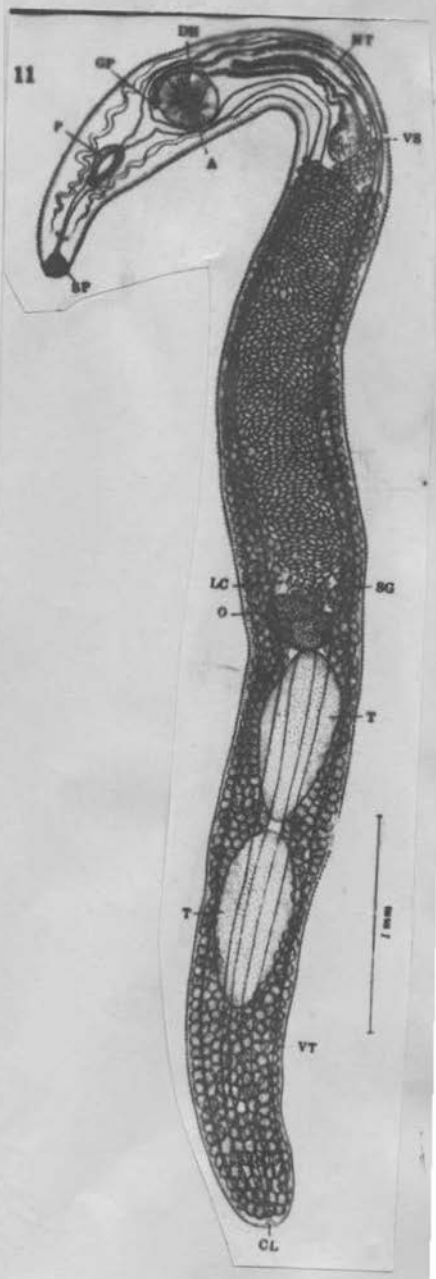
Habitat. Small intestine of *Caranx equula* Temm. et Schleg.
Locality and date. Taizi, Wakayama Prefecture; May 11, 1941.

Material. Three fully gravid specimens fixed in acetic sublimate, stained and mounted.

Body slender, 7.1 - 7.75 mm in length, with nearly uniform maximum breadth of 0.5 - 0.65 mm between anterior end of vitellaria and posterior testis; forebody tapering anteriorly and blunt-pointed, hindbody with rather blunt end. Cuticular spines commencing behind oral sucker, attaining maximum length of 40 μ and maximum breadth of 14 μ in front of pharynx, disappearing near posterior extremity. Of the subcuticular muscles the longitudinal and diagonal fibers are strongly developed in the entire forebody and the anterior part of the hindbody. Eye-spots at anterior part of prepharynx, inconspicuous.

Oral sucker projecting prominently at equatorial zone, so that it appears like a rhomb with truncate ends, 0.1 - 0.11×0.12 - 0.13 mm. Circumoral spines 36 in number with slit-like hollow, arranged in two alternating rows of 18 each; the aboral spines are more fusiform than the oral, which are rather club-shaped; the ventral spines of both rows are nearly of the same length (38 - 45 μ), but on the dorsal side the aboral spines are a little longer than the oral (48 - 54 : 52 - 50 μ). Prepharynx narrow, somewhat enlarged at posterior end, 0.35 - 0.6 mm long, inclosed in a sheath of strong longitudinal muscle, some fibers of which extend over the pharynx and are attached to the anterior end of the esophagus. The approximately funnel-shaped dilatation of the latter is doubtless due to this musculature. Pharynx elongated pyriform, 0.21 - 0.23× 0.09 - 0.15 mm. Esophagus 0.09 - 0.18 mm long, consisting of thick cuticular lining, inner longitudinal and outer circular muscle fibers, surrounded by a thick layer of gland-like cells laterally and dorsally, bifurcating immediately in front of genital pore. Ceca narrow from beginning to ovarial region, whence they widen considerably, especially in the posttesticular area, each connected at its posterior end with the excretory vesicle by a narrow passage to form a terminal cloaca. Acetabulum 0 27 - 0.3 mm in diameter, at posterior end of anterior third of body.

Testes elliptical or fusiform, 0.75 - 0.95× 0 33 - 0.36 mm, contiguous or separated a little one from the other by vitellaria; the anterior at junction of middle with posterior third of body, the posterior 1.0 - 1.2 mm apart from posterior extremity. Cirrus pouch elongated club-shaped, about 0.95 mm long by 0.16 mm broad, with comparatively thin wall of inner circular and outer longitudinal muscle fibers. Vesicula seminalis approximately club-shaped, 0.125 - 0.15 mm in diameter at its posterior swelling, surrounded by well developed prostate cells at its anterior tapering portion. Pars



prostatica tubular, surrounded by prostate cells, 0.13 – 0.21×0.038 – 0.04 mm, more or less winding, provided with inner circular muscle fibers, which are more conspicuous than those of the vesicula seminalis and of the cirrus. Cirrus tubular, 0.4 – 0.63×0.048 – 0.052 mm, densely spined, accompanied by prostate cells, projecting into ductus hermaphroditicus. Latter 0.4 – 0.45 mm long, covered inside with acicular spines, extending a short distance back of acetabulum, provided with weak inner circular and very strong outer longitudinal muscles. Genital pore immediately pre-acetabular.

Ovary ovoid, 0.22 – 0.3×0.31 – 0.36 mm, median or only slightly dextral, contiguous to anterior testis or separated from it by a narrow space into which the vitelline follicles are intruding, leaving the median line free. The germiduct arises from the anterodorsal side of the ovary, then turns at right angles to the left to give off the Laurer's canal, which is slightly enlarged at the beginning but maintains elsewhere a uniform width of about 9 μ, and after describing an S-shaped curve opens to the outside dorsal or immediately anterior to the ovary. Shell gland immediately in front of ovary. Ootype preovarian, a little to the left of median line. Receptaculum seminis uterinum present. Uterus tightly coiled in intercecal field between ovary and cirrus pouch, straightened out by the side of the vesicula seminalis, near the anterior portion of which it passes into the metraterm. Latter 0.5 – 0.75×0.08 – 0.088 mm, with thin wall of inner circular and outer longitudinal muscles, but densely covered with spines. Eggs oval, 51 – 66×36 – 42 μ. Vitelline follicles extending along ceca from level of posterior end of cirrus pouch to posterior extremity, on dorsal, ventral and lateral sides of ceca from beginning to ovarian level but on all sides further posteriorly except in the testicular region; transverse vitelline ducts uniting dorsal to ovary near origin of germiduct. Cloaca opening terminally. Anterior extent of excretory vesicle not determined. Collecting vessels dilated and twisted beside acetabulum and pharynx, especially the latter.

The present species is distinguished from the most closely related *Echinostephanus ditrematis* Yamaguti, 1939, in body size, sucker ratio, and position of ovary and testes.

Literature.

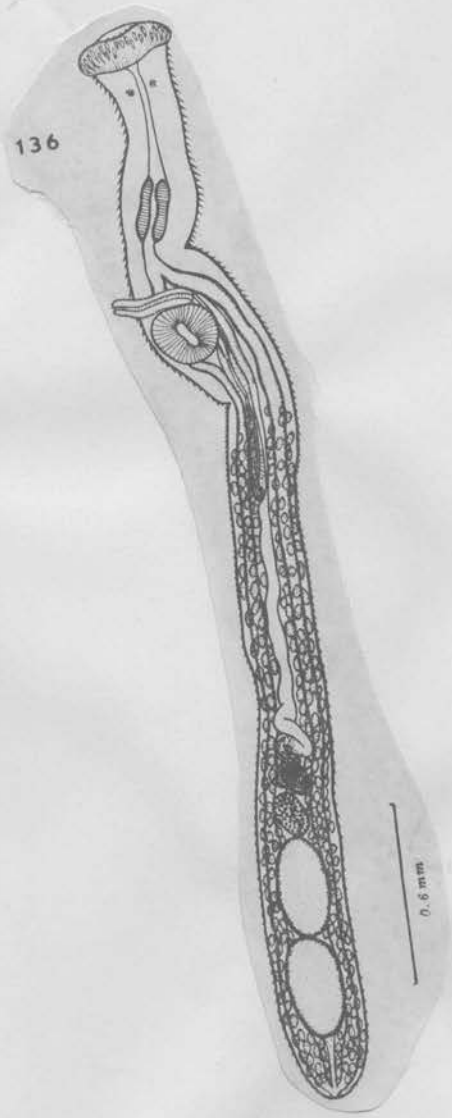
Lebour, M. V., Fish trematodes of the Northumberland coast. Northumb. Sea

136. *Stephanostomum petimba* ~~n. sp.~~
(Fig. 136) Yamaguti, 1970

HABITAT: Intestine of *Fistularia petimba*; Hawaii.
HOLOTYPE: U. S. Nat. Mus. Helm. Coll., No. 63735.
DESCRIPTION (based on 15 whole mounts): Body subcylindrical, 2.2-4.5 mm long, 0.15-0.36 mm wide in testicular region, more or less attenuated in neck region. Forebody hispid except for postoral region; body spines up to 35-40 μ in region of pharynx; hindbody covered with smaller spines which diminish in size and number posteriorly. A pair of compact eyespots present. Oral sucker terminal, discoid, or fingerbowl-shaped, 0.1-0.17 X 0.19-0.34 mm; circumoral spines 42, in two uninterrupted alternate rows; lateral spines 70-82 X 13-16 μ, dorsal spines 56-90 X 11-14 μ, midventral spines 23-51 X 7-9 μ; aboral spines slightly larger than orals. Prepharynx narrow, 0.15-0.85 mm long; pharynx cylindrical to pyriform, 0.13-0.23 X 0.08-0.14 mm; esophagus 0.08-0.3 mm long, bifurcating a little in front of acetabulum; each cecum opening into excretory pore by a short narrow passage. Acetabulum prominent, 0.15-0.22 mm in diameter, situated at, or a little anterior or posterior to, junction of anterior with middle third of body.

Testes elliptical, 0.17-0.5 X 0.08-0.25 mm, directly tandem in caudal third of body. Cirrus pouch slender, 0.4-1.1 mm long lineally, 50-90 μ wide posteriorly, extending into anterior part of vitellarian zone, may reach or exceed equatorial level; seminal vesicle elongate claviform, 0.45-0.6 mm long, 30-80 μ wide; pars prostatica represented by a narrow tubule about 0.2 mm long and surrounded by very poorly developed prostatic cells; ejaculatory duct much wider than pars prostatica, lined with spiniform villi, may be everted out of genital pore in form of an armed cylindrical cirrus 0.25-0.3 mm long by 40-60 μ wide. Hermaphroditic duct 0.2-0.82 mm long, thin-walled, unarmed, opening immediately in front of acetabulum.

Ovary subglobular, 0.08-0.15 X 0.07-0.14 mm, immediately pretesticular, in anterior half of caudal third of body. Laurer's canal opening dorsal to posterior end of ovary. Uterus loosely winding in median field; metraterm commencing at posterior part of cirrus pouch, running all the way through along cirrus pouch. Eggs oval, broadly rounded at opercular pole, 58-63 X 35 μ in life, 58-70 X 37-49 μ in balsam mounts. Vitellaria extending along ceca from anterior half of middle third of body to posterior extremity, commencing at level of anterior end of seminal vesicle in the type, nearly confluent behind posterior testis. Vitelline reservoir dorsal to ovary. Excretory vesicle reaching to ovary; cloacal aperture terminal.



DISCUSSION: This species differs from *Stephanostomum fistulariae* Yamaguti, 1940 from the same host species of Japan in the number of the circumoral spines (42 vs. 56), in the relative location of the ovary and testes, and in the cirrus pouch being much longer and slender. The size ranges of the living eggs of the two species are somewhat different (58-63 X 35 μ vs. 60-69 X 37-40 μ).

Family ACANTHOCOLPIDAE

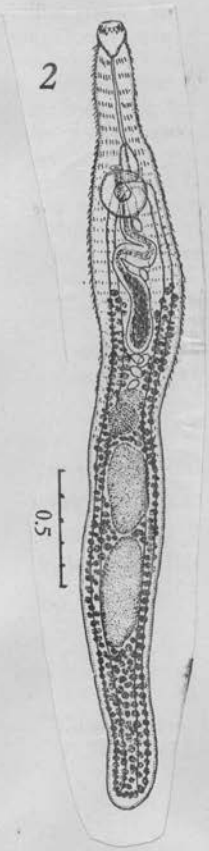
Stephanostomum platacis n. sp. Nagaty, 1957

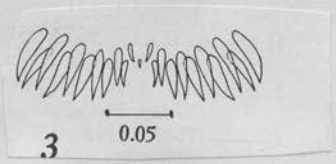
(Figs. 2–3)

Description (Based on 5 specimens) : Body elongate, 3 to 4 long, 0.3 to 0.4 in maximum width; anterior third translucent, tapering; cuticle with spines that decreases in size and number towards the middle of the body. Acetabulum 0.183 to 0.22 in diameter; at posterior part of anterior fourth of body length. Oral sucker 0.088 to 0.144 in diameter, with about 40 wedge-shaped spines in 2 rows, interrupted ventrally; mid-ventral spines smaller and separated by a single very small median spine (Fig. 3); longest spines average 0.046. Prepharynx long; pharynx pyriform, 0.183 to 0.228 long by 0.088 to 0.124 wide; situated immediately anterior to acetabulum or partly overlapping it dorsally; esophagus very short or lacking; intestinal ceca end blindly close to posterior end.

about 40

Testes 2, elongated, close together, at anterior part of posterior half of body; cirrus sac long, sinuous, a little over 1/3 total length of body, extending posteriorly to more than 2/3 the space between acetabulum and ovary; seminal vesicle in posterior third of cirrus sac. Genital pore median, immediately anterior to acetabulum. Ovary spheroid, closely anterior to anterior testis, at equator of body; shell gland complex well developed, anterior to ovary; vitellaria





lateral, confluent posterior to testes, extending anteriorly more than half way between ovary and acetabulum, overlapping posterior third of cirrus sac. Uterus preovarian, containing a few eggs; eggs 0.063 by 0.042 in size.

Host: Platax sp., locally called "Ferdewa bayad".

Locality: Ghardaga

Discussion: This species is very similar to *S. bicoronatum* (Stossich, 1883). It differs in being much smaller, with smaller eggs, and with 40 rather than 30–33 oral spines. The ventral interruption of oral spines is complete in *S. bicoronatum*. *S. platacis* differs from *S. ditrematis* (Yamaguti, 1942) in that the ovary is close to the anterior testis, and the vitellaria extend anterior to the base of the cirrus sac.

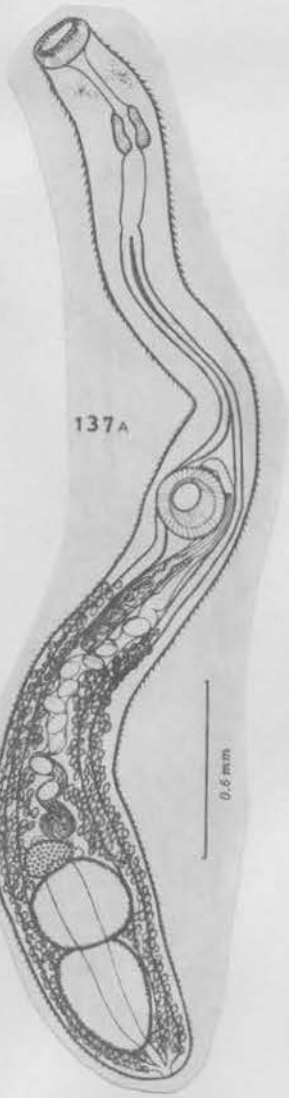
137. *Stephanostomum polymixiae* n. sp.
(Fig. 137) Yamaguti, 1970

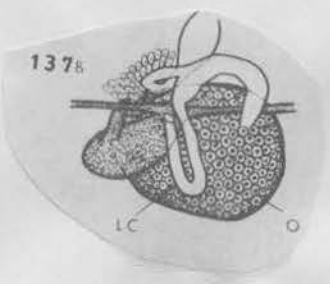
HABITAT: Intestine of *Polymixia japonica*; Hawaii.
HOLOTYPE: U. S. Nat. Mus. Helm. Coll., No. 63736.
DESCRIPTION (based on six whole mounts): Body 3.7-6.3 mm long, subcylindrical, enlarged in posterior third, up to 0.5-0.8 mm wide at testicular zone. Cuticle spinose all over, except for small postoral zone; spines up to 30 μ long in midregion of forebody, embedded in elevated cuticular scales. Eyespot dissociated. Oral sucker ring-shaped, 0.12-0.17 × 0.2-0.23 mm; circumoral spines 62, in two uninterrupted, alternating rows, 23-25 μ long by 6 μ wide; prepharynx wide, 0.22-0.42 mm long; pharynx approximately pyriform, 0.12-0.17 × 0.11-0.15 mm; esophagus 0.22-0.5 mm long, bifurcating far away from acetabulum; ceca divergent one from the other just in front of genital pore, forming cloaca at extreme posterior end of body. Acetabulum 0.29-0.38 × 0.26-0.3 mm, situated in anterior half of middle third of body.

Testes subglobular, 0.29-0.6 × 0.29-0.47 mm, directly tandem, nearer to posterior extremity than to anterior end of posterior third of body. Cirrus pouch subcylindrical, 0.5-0.78 × 0.06-0.1 mm, extending far posterior to acetabulum into anterior extent of vitellaria; seminal vesicle cylindrical, 0.23-0.46 × 0.04-0.085 mm; pars prostatica tubular, sigmoid, 110 μ long lineally in the type, lined with flattened epithelia and surrounded by prostate cells; ejaculatory duct projecting into hermaphroditic duct for a length of 210 μ in the type. Genital pore median, just pre-acetabular.

Ovary subglobular, 0.12-0.24 × 0.05-0.27 mm, contiguous with anterior testis a little to right of median line. Germiduct arising from near dorsodextral margin of ovary, turning back on itself immediately in front of ovary to join vitelline reservoir. Laurer's canal forming U-shaped loop dorsal to ovary, opening dorsally at level of anterior part of ovary. Receptaculum seminis uterinum present. Uterus loosely winding in median field; metraterm extending sinuously from level near posterior end of cirrus pouch to anterior end of latter on its left side. Eggs more tapered at antiopercular pole than at opercular pole, 70-77 × 51-58 μ in life; 83-100 × 56-63 μ in balsam mounts. Vitellaria circumcecal, commencing at or near anterior end of seminal vesicle, almost confluent behind posterior testis; vitelline reservoir dorsosinistral to ovary in the type. Excretory vesicle reaching to ovary; pore terminal.

DISCUSSION: This species differs from any of the known members of the genus in the esophagus bifurcating far anterior to the acetabulum into close-parallel ceca and in the number of the circumoral spines.





Stephanostomum pristis (Deslongchamps, 1824) Looss 1899

(36)

Stephanochasmus pristis (Deslongch). Looss ~~1901~~ 1899

Body cylindrical, elongated, thread-like to naked eye. Posterior part of the body not widened.
Oral spines exactly 36, uninterrupted ventrally
In a 4.5 mm. specimen the anterior spines average about 0.039 mm. in length, the posterior ones 0.036 mm. The points of the posterior spines over-reach the points of the anterior spines. The body spines of the neck region are not especially stronger.
Oral sucker considerably smaller than ventral sucker, ratio about 2:3 1:1.33
Cirrus sac is always shorter than ½ the distance between ventral sucker and ovary.
Vitellaria extend foward not quite to the base of the cirrus sac. Constantly interrupted opposite the testes. Between the testes and between the testis and ovary they form a continuous band across the body.
Egg about 60 by 45 u

Hosts: Gadus euxinus
Gadus minutus
Motella vulgaris

Fig. 3.

Fig. 3a.

From Looss, 1901.
SEE REPRINT.

From Lebour 1908

From Gadus Morrhua by Lebour 1908

1975 Oliveira Rodrigues, M. de et al. Reported 1 parasite from Trisopterus luscus (L.) along Portuguese Continental Coast [also listed Odontogadus merlangus as a previously reported host in addition to most cited reports]

17. **Stephanostomum pristis** (Deslongchamps, 1824) Looss, 1899

HOST: *Physiculus bachus* (Bloch & Schm.), red cod; intestine.

LOCALITIES: Wellington, Portobello.

SPECIMEN DEPOSITED: U.S. Nat. Mus. Helminth. Collection No. 49159.

DISCUSSION: A total of eight mature specimens were collected from three infected hosts. Measurements on four will show variations. Body length 4·172 to 5·838 mm.; width 0·420 to 0·490 mm. Forebody 0·630 to 0·980 mm.; post-testicular space 0·378 to 0·574 mm. Oral sucker 0·123 to 0·231 mm.; acetabulum 0·154 to 0·231 mm.; sucker ratio 1 : 1 to 1·25. Oral spines 36 to 42. Pharynx 0·177 to 0·192 mm. long by 0·154 to 0·177 mm. wide. Gonads are all separated by vitellaria. Cirrus sac extends about $\frac{1}{3}$ distance from acetabulum to ovary. The vitellaria extend forward to the base of the cirrus sac or beyond as far as the middle of the sac. They are interrupted opposite the gonads although only slightly so opposite the ovary. Eggs are 57 to 72 by 26 to 40μ.

It will be seen that these trematodes agree well with *S. pristis*, particularly the *S. pristis* of Lebour, 1908, except perhaps in sucker ratio which is reported as 1 : 1·5 for *S. pristis* and is only 1 : 1 to 1·25 in my specimens. A single egg measurement of 60 by 45μ is given for *S. pristis* probably for an uncollapsed egg which in my specimens measured 68 by 45μ. It does not seem feasible to name a different species on the basis of these differences. *S. pristis* is reported from *Gadus callarias* and *Gadus merlangus* in Great Britain.

Another species of *Stephanostomum* was collected together with *S. pristis*. Only one mature and one almost mature specimens were collected each from a different red cod. Both had lost all oral spines. Thus, an important specific character was missing. The chief difference between these specimens and *S. pristis* was the distribution of the vitellaria which overlapped the acetabulum slightly and were continuous without interruption opposite ovary and testes. The eggs were slightly larger and the cirrus sac reached halfway to the ovary. The pharynx was relatively small. The general appearance of this species is very much like that of *S. triglae* (Lebour, 1908) but the eggs are only 76μ long rather than 99μ.

79. Stephanostomum promicropsi n. sp.

Figs. 54, 55

HOST: *Promicrops itaiara* (Lichtenstein), jewfish; present in each of 4 hosts examined.

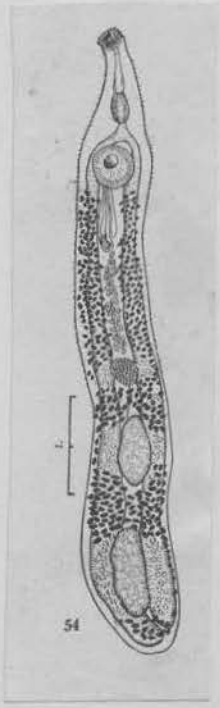
LOCATION: Posterior half of intestine.

Description: Body elongate, tapering anterior to acetabulum, almost equally wide along most of length, posterior end broadly rounded; length 4.250 to 7.080 mm, greatest width 0.720 to 0.977 mm. Oral sucker 0.172 to 0.285 mm in transverse diameter; oral spines larger; only one of 7 specimens had as few as 50 oral spines, one had 58, all others had 52. Acetabulum from 1/5 to 1/8 body length from anterior end; 0.390 to 0.540 mm in diameter; sucker ratio almost exactly 1:2. Prepharynx longer than pharynx but varying

with contraction of the forebody; pharynx pyriform, 0.337 by 0.270 mm in a 6.3 mm specimen; esophagus short; intestinal bifurcation shortly anterior to acetabulum; ceca often swollen as if inflated, each connected with the excretory vesicle to form a uroproct.

Genital pore median, close in front of acetabulum. Testes ovoid, elongate, smooth or slightly irregular in outline, tandem but separated by vitellaria; posterior testis close to posterior end of body and usually much more elongate than anterior testis. Cirrus sac containing a more or less coiled cirrus and a sac-like seminal vesicle, extending posterior to acetabulum usually not quite half way to the ovary; in one specimen it reached about 1/3 to the ovary and in none did it reach more than half way. Ovary globular, pretesticular, near but slightly posterior to midbody, separated from anterior testis by vitellaria; follicles dense, close together, extending almost to (or, in a few specimens all the way to) the posterior border of the acetabulum; extending to posterior end of body but interrupted ventrally on each side opposite at least one and usually both of the testes; dorsally they are continuous, covering the ceca, surrounding the gonads, confluent between the testes and between the testes and the ovary. Uterus preovarian; eggs thin-shelled, almost colorless, more blunt on one end; usually 51 to 56 by 25 to 31 μ; one measurement was as high as 58 by 49 μ; metraterm slightly shorter than the cirrus sac.

Comparisons: The most unique feature of this species is the distribution of the vitelline follicles which are continuous dorsally and cover practically the entire body posterior to the acetabulum but which are interrupted ventrally opposite the testes. *S. promicropsi* differs from species having vitellaria interrupted opposite the gonads as follows: from *S. lineatum:* anterior extent of vitellaria and posttesticular distance; from *S. pristis:* anterior extent of vitellaria; posttesticular distance, and number of oral spines; from *S. rhombispinosum:* anterior extent of vitellaria, and number of oral spines.



7. *Stephanostomum promicropsi* Manter, 1947
(Figs. 10 to 11)

Host: Promicrops itiara (Leichenstein); jewfish; family Serranidae.
Incidence of infection: In 1 of 1 host examined.
Location: Rectum.
Locality: Tampa Bay, Florida, new locality record.

S. promicropsi is also known from Tortugas, Florida. This record is the

SOGANDARES-BERNAL AND HUTTON—TREMATODES OF FISHES 341

northernmost for the species. An outstanding feature of *S. promicropsi* is that the vitellaria ventral to the ceca are interrupted at the level of the testes.

FROM: SOGANDARES-BERNAL & HUTTON, 1959

Stephanostomum **provitellosum,** sp. nov.[11] Sogandares-Bernal, 1959
(Figures 33-34)

Hosts.—Balistes naufragium Jordan & Starks; *Balistes polylepis* Steindachner, trigger fish, cochino.

Location.—Rectum.

Locality.—B. naufragium from Taboga Island, Panama; and *B. polylepis* from Galapagos Islands (Manter's collection).

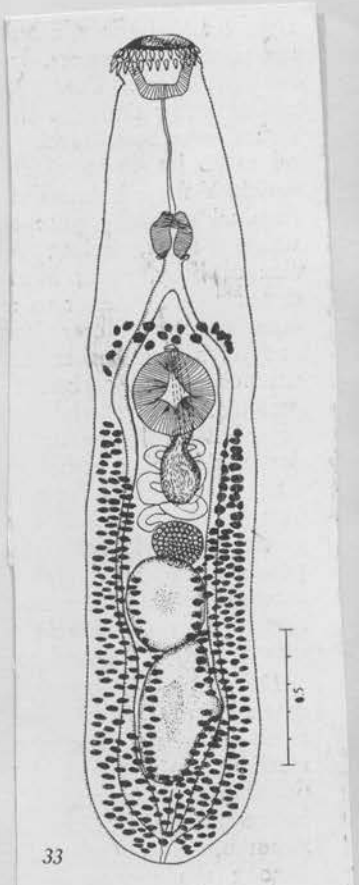
Holotype.—U.S.N.M. Helm. Coll. No. 38869.

Diagnosis (based on ten specimens; measurements on nine).—Body 2.622 to 3.572 long by 0.513 to 0.665 wide, spined to posterior end. Cuticle heavily spined, with anteriormost row of spines (proximal to oral spines) larger than other body spines. If the second and third row of body spines are missing, the oral crown appears to have three rows of spines of which the posterior row is separated by some distance; this latter row of spines is to be interpreted, I believe, as the anterior row of body spines. Forebody 0.893 to 1.116 long. Posterior body 1.425 ot 1.950 long. Oral sucker terminal, 0.285 to 0.361 long by 0.241 to 0.342 wide; with two rows of 28 spines each; spines in both rows approximately 40 microns long. Acetabulum immediately anterior to midbody from 0.285 to 0.361 long by 0.268 to 0.323 wide. Sucker ratio from 1:0.94 to 1.12. Prepharynx 0.285 to 0.4 long. Pharynx pear-shaped, with a band of circular muscles around its anterior third; 0.133 to 0.190 long by 0.133 to 0.19 wide. Esophagus a little shorter than pharynx. Ceca extend to posterior end of body where they join the excretory bladder to form a uroproct. Genital pore median, close to anterior edge of acetabulum. Gonads postequatorial, tandem, intercecal. Testes in contact with each other or slightly overlapping, globular; anterior testis 0.304 to 0.435 long by 0.235 to 0.342 wide; posterior testis 0.380 to 0.494 long by 0.228 to 0.323 wide.

[11] The name *provitellosum* is from the latin *pro-*, anterior and *vitellus*, yolk glands, in reference to the anterior band of vitelline follicles which characterize the species.

Cirrus sac extending posterior to acetabulum from 1/2 way to almost in contact with ovary; internal seminal vesicle in posterior 1/2 to 1/3 sac; cirrus in anterior 1/2 to 2/3 sac, spined. Ovary globular, pretesticular, median, usually in contact with anterior testis, 0.190 to 0.266 long by 0.152 to 0.266 wide. Vitellaria follicular, filling posttesticular space, overlapping dorsally and ventrally and extending across body immediately anterior to acetabulum, interrupted at acetabular level. Uterus intercecal between ovary and genital pore; entering a thin-walled metraterm which is as long as cirrus sac and unspined. Eggs thin-shelled. Collapsed eggs in utero, 57 to 75 microns long. Uncollapsed eggs in utero proximal to ovary 58 to 74 by 46 to 53 microns. Excretory vesicle not observed anterior to posterior testis.

Discussion.—At least 40 species have been named in the genus *Stephanostomum* Looss, 1899. *S. provitellosum* differs from all by possessing a transverse band of vitelline follicles anterior to acetabulum and with follicles interrupted at the level of the acetabulum. The species is probably of the *S. dentatum* (Linton, 1901) type, but differs in details of vitellaria and in having a uroproct. It resembles *S. casum* (Linton, 1910) in possessing a uroproct but differs in distribution of vitellaria and number of oral spines.



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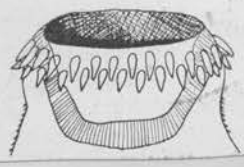

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7. *Stephanostomum provitellosum* Sogandares, 1959.

Hospedador: *Balistes polylepis* Steindachner.
Localización: intestino.
Distribución geográfica: Isla Angel de la Guarda, Baja California, México.

Sogandares-Bernal (1959) encontró esta especie en el mismo hospedero, pescado en las Islas Galápagos y en la Bahía de Panamá.

From: Arai, H.P., 1962.

Stephanostomum **pseudocarangis,** sp. nov.[12]

Sogandares-Bernal, 1959

Host.—*Holocentrus ascensionis* (Osbeck), squirrel-fish.

Location.—Immature in pyloric cecum, mature forms in rectum.

Locality.—Lerner fish pens, N. Bimini; and near Cat Cay, B.W.I.

Holotype.—U.S.N.M. Helm. Coll. No. 38870.

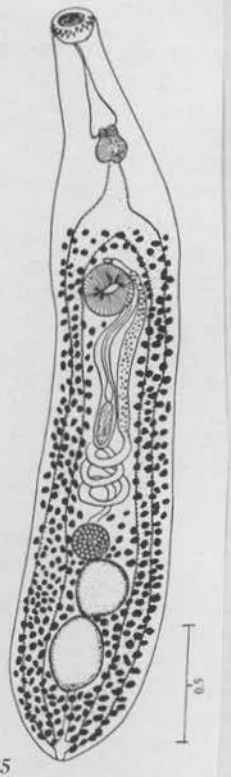
Diagnosis (based on 3 mature specimens).—Body elongate, widest at testicular level, spined, 3.267 to 3.629 long by 0.513 to 0.646 wide at acetabulum. Two eyespots present at level of mid-prepharynx. Forebody 0.969 to 1.045 long. Hindbody 1.976 to 2.067 long. Oral sucker terminal; 0.107 to 0.167 long by 0.167 to 0.201 wide; with 36 peribuccal spines in alternate rows of 18 each, measuring from 47 to 54 microns long. Acetabulum approximately in anterior 1/3 body; 0.241 to 0.255 long by 0.249 to 0.308 wide. Sucker ratio 1:1.27 to 1.53. Prepharynx approximately 2.25 times longer than pharynx. Pharynx pyriform, almost equidistant between oral sucker and acetabulum; 0.160 to 0.214 long by 0.167 wide. Esophagus about 1.25 times longer than pharynx. Cecal bifurcation approximately midway between pharynx and acetabulum; ceca joining excretory vesicle to form a uroproct. Genital pore median, immediately preacetabular. Genital atrium to about mid-acetabulum on left side. Gonads intercecal ,tandem in posterior third of body. Testes slightly separated from each other or juxtaposed, roundish and smooth; anterior testis 0.274 to 0.295 long by 0.228 to 0.282 wide; posterior testis 0.308 to 0.362 long by 0.227 to 0.261 wide. Cirrus sac from genital atrium to approximately 2/3 distance from acetabulum to ovary; internal seminal vesicle bulbular in posterior 1/4 sac; cirrus heavily spined, in anterior 3/4 sac. Ovary rounded, immediately anterior to testes and juxtaposed or separated from testes by a short distance. Vitellaria forming a transverse band preacetabularly between cecal bifurcation and acetabulum, extending to posterior end of body, overlapping ceca dorsally and ventrally, filling posttesticular space. Uterus coiling a few times between ovary and cirrus sac; metraterm spined, to left of cirrus sac, almost as long or longer than cirrus sac—depending on whether the cirrus is restracted or protruded. Genital atrium short. Eggs thin shelled, 51 to 59 by 32 to 35 microns. Excretory pore terminal; excretory vesicle not visible anterior to posterior testis.

Discussion.—Only three species of *Stephanostomum* possess vitellaria that are confluent anterior to the acetabulum; these are: *S. carangis* (Yamaguti, 1951) Caballero, 1952; *S. microcephalum* Manter, 1934; and *S. provitellosum* (this paper). *S. pseudocarangis* differs from all three by possessing a spinous metraterm. It further differs from *S. carangis* by possessing a cirrus sac which extends posteriorly 2/3 distance from the acetabulum to the ovary, as compared with an extent midway from acetabulum to ovary. *S. pseudocarangis* differs from *S. microcephalum* by possessing 36 peribuccal spines in 2 rows of 18 each as compared with 150 spines in 3 concentric rows. *S. pseudocarangis* further differs from *S. provitellosum* by possessing vitellaria which are not interrupted opposite the acetabulum.

[12] The name *pseudocarangis* indicates the close relationship of the species with *Stephanostomum carangis* (Yamaguti, 1951) Caballero, 1952.

Stephanostomum pseudocarangis Sogandares-Bernal, 1959
Host: Holocentrus ascensionis (J).
Site: intestine.

JAMAICA; FROM NAHHAS + CABLE, 1964



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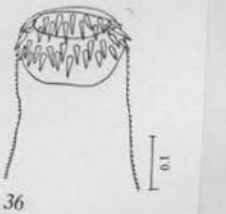

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Stephanostomum rhombispinosum (Lebour, 1908) Manter, 1934

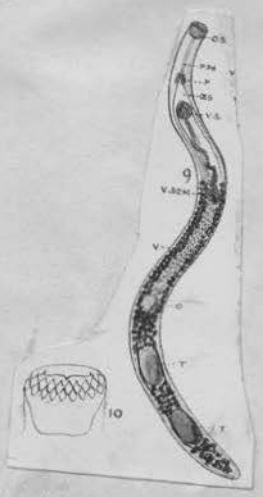
Stephanochasmus rhombispinosus Lebour 1908

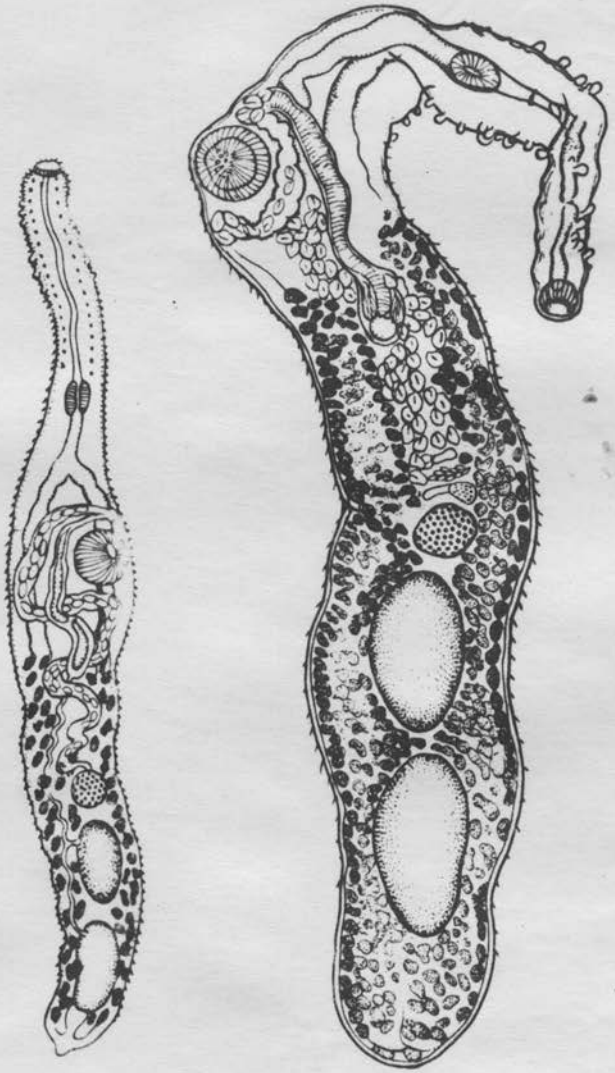
36-38

5. - 10 mm. long, 0.3 mm. wide, tapering anteriorly.
A long, narrow form.
Head with two rows of very flat, broad rhombic spines.
Number of head spines either 36 or 38.
Oral and ventral suckers equal in size, 0.16 mm. in diameter
Prepharynx 0.49 mm. long, pharynx 0.10 mm. long by 0.08 mm.
Esophagus short and broad.
Testes oval, 0.4 mm. long, hind testis distant from anterior testis by 0.8 mm.
Cirrus sac long and curved, reaching as in S.pristis not halfway between the ventral sucker and ovary.
Ovary round about 0.5 mm. in front of anterior testis.
Eggs not numerous, 0.08 mm. in length.
Vitellaria from posterior end of body to about halfway up the thick portion of the seminal vesicle, filling up the space between, behind, and in front of testes and in front of ovary.

Host: Whiting

Gadus merlangus
European waters





60. *Stephanostomum robustum* (McCallum, 1917) Caballero, 1952

(*а* — по Мак Каллуму, 1917; *б* — по Кабаллеро, 1952)

MAC CALLUM, 1917

Stephanochasmus robustus, sp. nov.

(Fig. 32)

Sub-family—*Echinostominae*.
Genus—*Stephanochasmus*.

Host—*Leptocephalus conger*.
Habitat—Intestines.
Locality—New York Aquarium.

With thirteen of these worms mounted from the intestine of a *Leptocephalus conger*, which was confined and died in the New York Aquarium, October 30, 1915, it is possible to choose from many good specimens. None of them are so large apparently as *S. cesticillus*, Mol., as shown in any plate presently accessible, yet they are much larger than the members of the following group, viz:—

S. valdeninflatus, *Stoss*—length ..	2.50-3.00 mm.
S. tenuis—Linton	3.00 mm.
S. tenuissimus—Linton	3.15-4.5 mm.
S. sobrinus—Lev.	4.5 mm.
S. dentatus—L.	1.14-1.85 mm.
S. casus—L.	2.24-6.37 mm.
S. sentus—L.	3.64-3.78 mm.
S. cesticillus uncertain at present but suspect	12.00 mm.
S. robustus—Dr. G. A. MacCallum	7.50 mm.

As there are other peculiarities, one is forced to conclude that this is another species to be added to the above known list.

Many of the species are spiny throughout, others have but few spines, although generally two rows about the mouth. Even those about the mouth are very irregular in these specimens, also on the neck. There are on the neck of many of them a peculiar lot of little round pediculated papules filled with fluid and arranged in more or less regular transverse rows of four or five different sizes (Fig. 32), and beside these are the spines and numerous stumps of spines.

The neck is long and composes about one-third of the length of the worm. It is cylindrical and extends from the mouth to beyond the division of the ceca. The mouth is terminal, or nearly so, and is surrounded on the lips by very prominent spines in broken up rows.

Immediately below the mouth on each side is a prominence or shoulder, which is present in almost every case, following a sort of neck. The oesophagus extends to the rather square-shaped pharynx which is placed two-thirds of the way down the neck, and is followed by a rather short post pharyngeal oesophagus, which divides into the ceca just before the neck reaches the body. Almost at the middle and situated on the left side of the body is the large acetabulum, and immediately in front of it is the genital cloaca. Where the uterus and cirrus terminate. The cirrus is long, showing well the unusually muscular prostatic portion. The whole is enclosed in a large cirrus sac. The testes, two in number, are relatively very large—the posterior one usually the larger, and the vasa efferentia join in front of the anterior testis to form the vas deferens. This is an unusual structure and the cirrus appears to have spines at its end. The ovary is not more than one-fifth or sixth the size of each testis. These latter are situated one before the other, near the posterior end of the body, and the ovary is immediately in front of these, and gives off its oviduct anteriorly where the genital junction may be seen of the vitelline ducts, the shell gland and the duct form the seminal reservoir.

The uterus is not very large nor are the eggs many, but they are relatively large. The vitellaria are not very profuse. The water vascular system can be followed in places, and is seen to terminate at the extreme end of the body.

Measurements of *Stephanochasmus robustus*.

Length	7.50 mm.
Width	.80 mm.
Testes	.80 x .40 mm

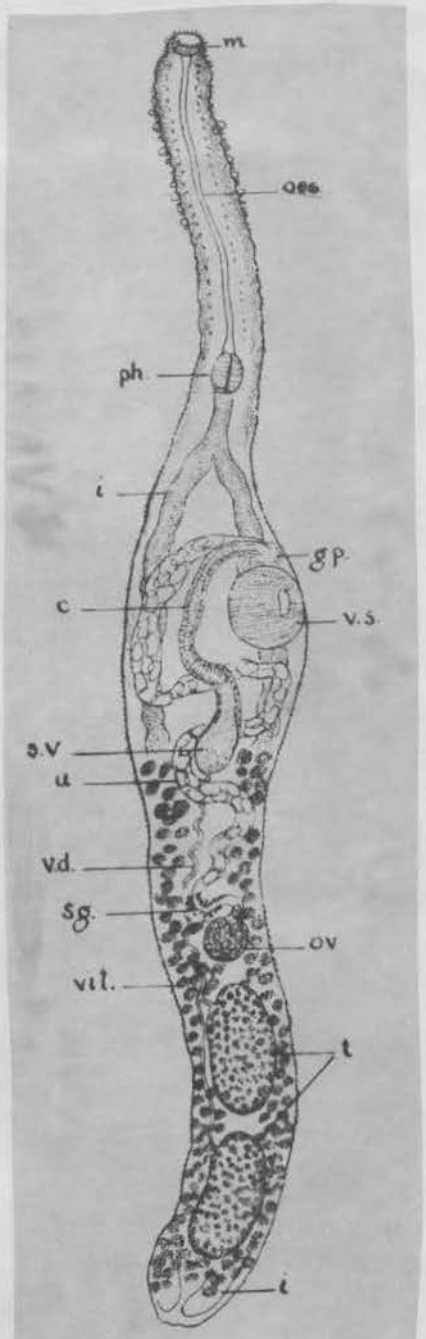


FIG. 32 STEPHANOCHASMUS ROBUSTUS

Stephanostomum scombri Korotaeva, 1974

see publication

Stephanostomum sentum (Linton, 1910) Manter, 1947

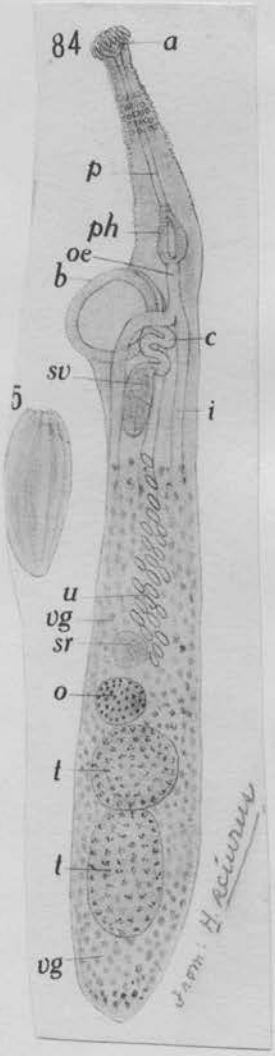
36

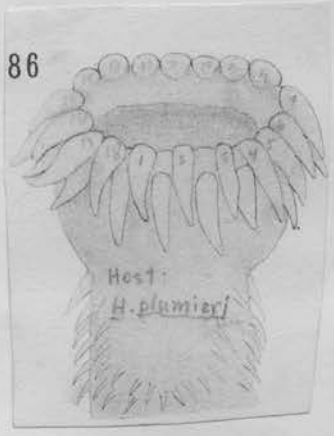
Diagnosis (condensed from Linton, 1910):

Body linear or slightly clavate; neck tapering, cylindrical.
1.96 to 3.78 by 0.3 to 0.55.
Oral sucker 0.10 to 0.14 wide; acetabulum 0.19 to 0.30 wide.
(Linton gives the sucker ratio as 1:1½. His table of measurements shows it may be 1:2)
Oral spines 36, 18 in each row.
Prepharynx long; pharynx pyriform; esophagus may be as long as pharynx.
Testes close together in posterior region of body; anterior testis subglobular, posterior testis oval and larger.
Cirrus sac extending behind acetabulum (about 1/3 to ovary ?)
Vitellaria extending forward to posterior end of cirrus sac.
Eggs 75 to 85 μ long, usually about 75 μ, width not given.
Hosts:

Calamus calamus
Haemulon plumieri
H. sciurus

Locality: Tortugas, Florida





Stephanostomum sentum (Linton, 1900) Manter, 1947

Host.—Calamus bajonado (Bloch & Schneider), jolthead porgy; *Cynoscion albus* (Gunther), corvina [new host record] *Malacanthus plumieri* (Bloch), sand fish [*new* host record]

Location.—Rectum.

Locality.—C. banjonado from 1/2 mi. W. (off Lerner Laboratory grounds) of N. Bimini, B.W.I.; *C. albus* from Taboga Island, Panama Pacific; and *M. plumieri* from between S. Bimini and Cat Cay, B.W.I.

Discussion.—These specimens were identified as *S. sentum* for the following reasons: (1) the vitellaria extend anteriorly only to the middle of the cirrus sac; (2) the cirrus sac extends less than halfway between acetabulum and ovary; (3) the oral spines are 36 in number in two alternate rows of 18 spines each; (4) the pre-pharynx is more than twice the length of the pharynx; (5) the sucker ratio is from 1:1.0 to 1.3; (6) the testes are in contact with each other in the posterior half of the body; and (7) some vitelline follicles come between the ovary and anterior testis. *S. casum* (Linton, 1910) is very closely related to *S. sentum*, differing mainly in that the cirrus sac does not extend halfway between acetabulum; the vitellaria are less extensive anteriorly, and extend between the anterior testis and ovary.

Stephanostomum sentum (Linton, 1910) Manter, 1947**

Synonym: Stephanochasmus sentus Linton, 1910

Host: **Menticirrus americanus*

Site: intestine

Locality: Alligator Harbor

APALACHEE BAY, GULF OF MEXICO FROM NAHHAS AND SHORT (1965)

Stephanostomum sentum (Linton, 1910) Manter, 1947

Synonym: Stephanochasmus sentus Linton, 1910.

Hosts: **Anisotremus virginicus* (J); **Caranx latus* (J); *Gerres cinereus* (C); **Haemulon album* (C); *H. sciurus* (J); **Lutianus* sp. (C).

Site: intestine.

CURAÇAO + JAMAICA; FROM NAHHAS + CABLE, 1964

Stephanostomum sentum (Linton, 1910) Manter, 1947

Stephanochasmus sentus Linton, 1910.
Stephanostomum mediovitellarum Pérez Vigueras, 1955.
Stephanostomum lopezneyrai Pérez Vigueras, 1955.

Hosts: *Calamus bajonado* (1 of 1); *Haemulon carbonarium* (1 of 1)*; *Ogcocephalus cubifrons* (1 of 2)*.

Site: Rectum.

Discussion: Three specimens agree with the diagnosis of *Stephanostomum sentum* by Manter (1947:306-307), but they differ from that given by Sogandares-Bernal (1959:89) in having sucker ratios of 1:1.6, 1:1.7, and 1:1.8, rather than 1:1.0 to 1.3. The specimen from *Ogcocephalus cubifrons* is 2.4 long with eggs 74 to 78 by 39 to 41 microns, which is still larger than *S. minutum* (Looss, 1901) at 1.2 to 1.9 with eggs 47 by 36 microns. Vitellaria are poorly developed anteriorly. In the specimen from *Calamus bajonado*, the anterior testis is not formed, and the posterior one is elongated. The excretory vesicle of this species ends immediately anterior to the posterior testis. Unlike Caballero (1952), Sogandares-Bernal (1959:89) did not consider *S. sentum* a synonym of *S. minutum* because he found immature specimens of *S. sentum* larger than mature *S. minutum* occurring in the same host.

Overstreet, 1969

80. **Stephanostomum sentum** (Linton, 1910) n. comb.

Figs. 56, 57

SYNONYM: *Stephanochasmus sentus* Linton, 1910.

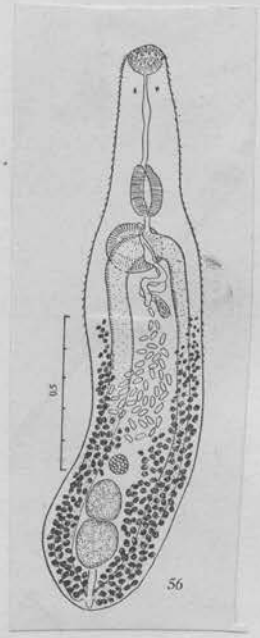
HOSTS: *Calamus bajonado* (Bloch & Schneider),* grass porgy; in 3 of 15 hosts examined. *Calamus calamus* (Cuv. & Val.), saucer-eye porgy; in 3 of 20 hosts examined. *Haemulon sciurus* (Shaw), yellow grunt; in 1 of 24 hosts examined. *Haemulon plumieri* (Lacépède), common grunt; in 1 of 34 hosts examined.

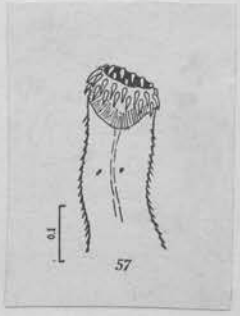
Discussion: This species was collected by Linton from the latter three hosts above. As in *S. casum*, there are 36 oral spines but the vitellaria reach only to the base of the cirrus sac. The gonads are all close together; the cirrus sac does not reach halfway from the acetabulum to the ovary. A uroproct is present. *S. sentum* seems to be very similar to *Stephanostomum imparispine* (Linton, 1905) Manter, 1940. Linton reported 34 spines for *S. imparispine;* his figure shows the cirrus sac reaching about 1/2 way to the ovary; and the length (9. mm) is much greater than that of *S. sentum.*

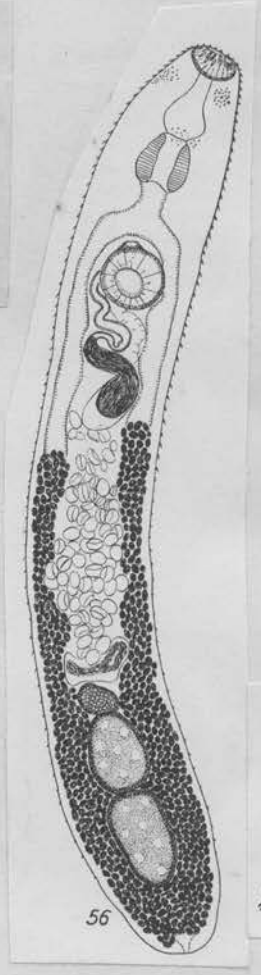
MacCallum (1917) described "*Stephanochasmus robustus*" from *Leptocephalus* conger. He gave no data on oral spines. So far as can be determined from his description his species agrees with *S. sentum* except in size (7. mm) and may be a synonym. The host, however is quite different, and the status of the species cannot be determined without study of MacCallum's specimens.

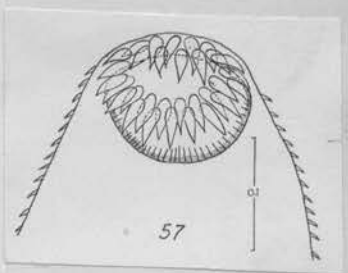
Four specimens of a *Stephanostomum* sp. collected from *Calamus calamus* probably are not *S. sentum*. The eggs were spherical and the acetabulum was smaller.

* New host record.









From Siddiqi & Cable, 1960:

Stephanostomum sentum (Linton, 1910) Manter, 1947 (Figs. 56 and 57)
Synonym: Stephanocahsmus sentus Linton, 1910
Hosts: Haemulon flavolineatum, Calamus arctifrons, Gerres ciner
Site: intestine
Localities: Cabo Rojo and Mona Island, P.R.
Deposited specimen: No. 39342
The presence of the uroproct in S. sentum was first observed by Manter (1947), but has not been observed for S. minutum Looss, 1901, to synonymy with which Caballero (1952) reduced S. sentum. That action seems unwar-

ranted because of the much smaller body and eggs of *S. minutum*. Both Manter (1947) and Skrjabin (1954) have accepted *S. sentum* as a valid species.

STEPHANOSTOMUM SENTUM (LINTON, 1910) MANTER, 1947 — Acanthocolpidae

SYN: PEREZ-VIGUERAS, 1955

4). *Stephanostomum lopezneyrai* ~~n. sp.~~ Fig. 5

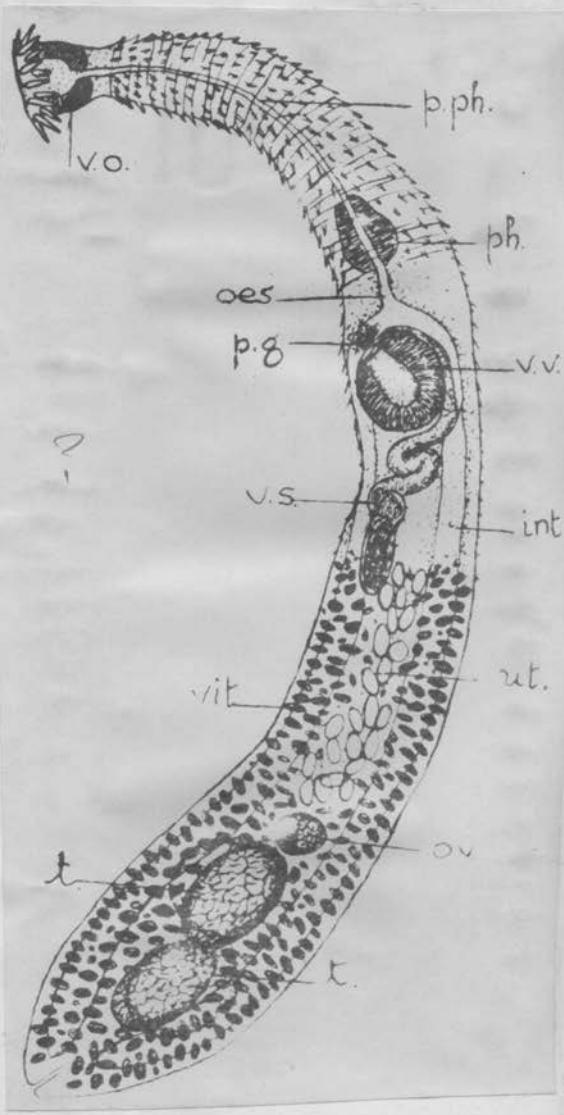
Hospedero : *Anisotremus virginicus* (Linnaeus). N. vulgar : «Catalineta».

Localización : recto.

Localidad : La Chorrera, Habana.

Es un trematode pequeño, de cuerpo alargado y estrecho, deprimido dorso-ventralmente, su parte anterior es atenuada con el extremo truncado, el posterior ligeramente ensanchado y de extremo redondeado, mide 1.9 mm. de largo por 0.32 mm. de ancho máximo. La cutícula presenta abundante espinas puntiagudas grandes, de cerca de 32 micras, las cuales se hacen menos numerosas hacia la parte posterior del cuerpo. La ventosa oral es terminal, campaniforme, musculosa, de 120 por 90 micras, con un orificio oral circular provisto de 26 a 28 espinas dispuestas en doble fila, alternas, no interrumpidas, las de la fila anterior miden 78 micras y las de la posterior 45 micras. La ventosa ventral es esférica, musculosa, de 160 micras de diámetro y se encuentra a 0.28 mm. del extremo cefálico. La pre-pharynx es larga y delgada, mide 0.43 mm. La pharynx es piriforme, musculosa, prominente, próxima a la bifurcación esofágica, mide 140 por 110 micras. El oesophagus mide 80 micras de largo, se bifurca por delante del poro genital y del acetabulum y los ciegos intestinales se extienden hasta el extremo posterior del cuerpo. Los dos testículos se encuentran hacia el extremo posterior del cuerpo, uno delante del otro, tangentes, alargados, lisos, de aproximadamente igual tamaño, miden 260 por 160 micras. El ovarium es esférico, liso, tangente al testículo anterior, y mide 110 micras de diámetro. La bolsa del cirrus y su vesícula seminal se extienden hasta 1/3 de la distancia entre el acetabulum y el ovarium ; glándulas vitelinas en forma de folículos pequeños distribuídos por las zonas intra y extracecales y parte post-testicular hasta el borde posterior de la vesícula seminal. Huevos relativamente numerosos, casi circulares, amarillo pálidos, de 60 por 46 micras de diámetro y operculados.

Los caracteres específicos de esta especie son : la pre-pharynx larga, la bolsa del cirrus larga, 26 espinas peribucales, espinas cuticulares grandes, testículos y ovarium tangentes, folículos vitelinos extendidos por detrás de la vesícula seminal.



AUTHORITY FOR SYNONYMY: SOGANDARES (1959)

STEPHANOSTOMUM SENTUM (LINTON, 1910) MANTER, 1947

PEREZ-VIGUERAS, 1955

Acanthocolpidae

SYN:

3). *Stephanostomum mediovitellarium* ~~n. sp.~~ Fig. 4

Hospedero : *Calamus bajonado* (Bloch y Schneider). N. vulgar, «Bajonado»

Localización : Intestinos.

Localidad : Litoral Norte de la Habana.

En el *Calamus bajonado* se ha descrito la especie *Stephanostomum minutum* (Looss) 1901 (=*Stephanostomum sentum* (Linton) 1910. La especie aquí descrita se distingue bien de la otra ya conocida.

Literatura :

Linton, E. 1910.

Helminth Fauna of the Dry Tortugas. II. Trematodes. Carnegie Inst. Wash. Publ. Núm. 133, págs. 45-46, figs. 84-85.

Manter, H. W. y Van Cleave, H. J. 1951.

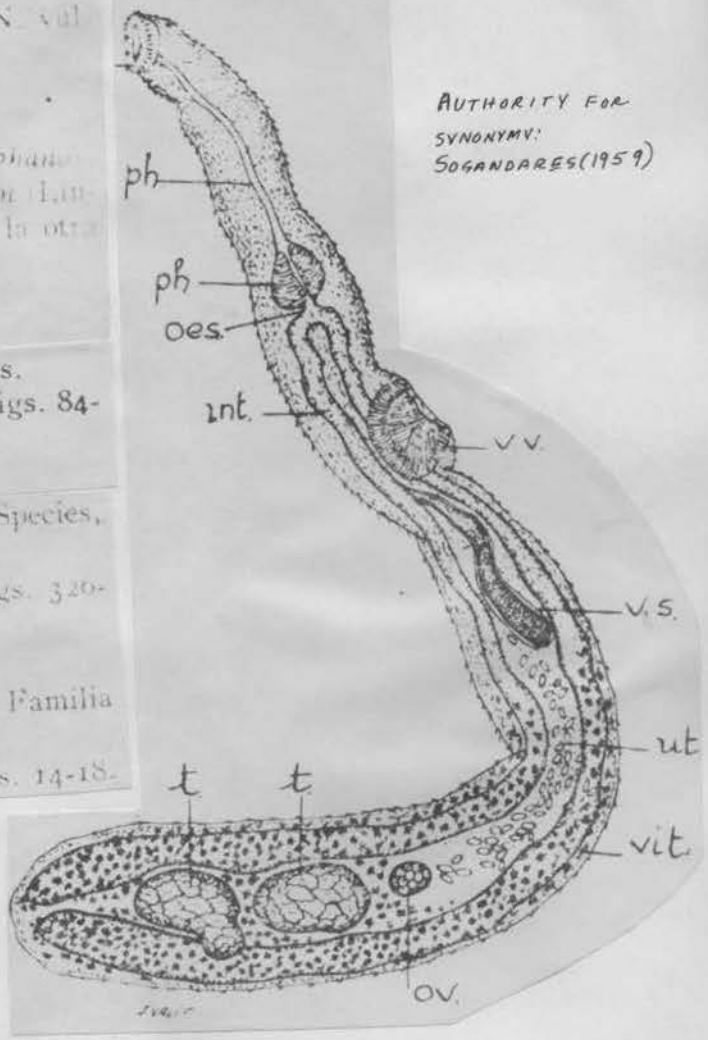
Some Digenetic Trematodes, Including Eight New Species, from Marine Fishes of La Jolla, California. Proc. U. S. Nation. Mus. Vol. 101, Núm. 3279, págs. 320-328.

Caballero, E. 1952.

Revisión de los Géneros y Especies que integran la Familia *Acanthocolpidae* Lühe 1909. Rev. Med. Parasit. Caracas. T. XI. Núms 1-2, págs. 14-18.

(34)

AUTHORITY FOR SYNONYMY: SOGANDARES (1959)



Descripción. — Cuerpo alargado, deprimido dorso-ventralmente, angosto en su parte anterior, extremo cefálico truncado, parte posterior del cuerpo ligeramente ensanchada y redondeada, mide 5.4 mm. de largo por 0.6 mm. de ancho máximo. Ventosa oral terminal, cupuliforme, de 200 micras de diámetro, con 34 espinas peribucales dispuestas en doble fila alternas, no interrumpidas, las anteriores miden unas 34 micras y las posteriores 53 micras. Cutícula fuertemente espinosa y espaciadas hacia atrás del cuerpo. Ventosa ventral semi-esférica, de 200 micras de largo por 160 micras de ancho, situada a 1.6 mm. del extremo cefálico. Pharynx musculosa, piriforme, de 200 micras de largo por 230 micras de ancho máximo. Pre-pharynx muy larga, delgada mide 0.88 mm. de largo; oesophagus corto, bifurcación esofágica distante del acetabulum., ciegos intestinales extendidos hasta el extremo caudal.

Sistema reproductor formado por dos testículos alargados, colocados uno detrás de otro, lisos, separados entre sí por folículos vitelógenos, situados en la región posterior del cuerpo, mide cada uno 0.41 mm. de largo por 0.23 mm. de ancho. La bolsa del cirrus y la vesícula seminal son largas, miden 0.4 mm. de largo.

-OVER-

El ovarium es ligeramente alargado, liso, pre-testicular, mide 160 por 140 micras, se encuentra separado del testículo anterior por folículos vitelógenos. Glándulas vitelógenas en forma de folículos pequeños distribuídos desde el nivel de la línea ecuatorial del cuerpo del parásito hasta su extremo posterior, muy por detrás de la vesícula seminal y ocupa los espacios intertesticular, inter ovarium-testicular y post-testicular. Huevos elípticos, amarillentos, de 80 por 45 micras.

Stephanostomum mediovitellarium difiere del *Stephanostomum minutum* (=*Stephanostomum sentum*), también parásito de *Calamus bajonado*, por su doble tamaño, su pre-pharynx muy larga, su bolsa del cirrus larga y la extensión de los folículos vitelógenos muy por detrás de la vesícula seminal.

Se le distingue del *Stephanostomum robustum*, que presenta también la prephaynx muy larga, en que en éste las glándulas vitelinas se extienden desde la mitad de la bolsa del cirrus hacia atrás y no tiene folículos vitelinos entre los testículos y el ovarium.

El *Stephanostomum mediovetellarium* se caracteriza por tener 34 espinas peribucales, la pre-pharynx muy larga, la bolsa del cirrus larga, el vitellarium post-ecuatorial y bastante posterior al borde posterior de la vesícula seminal.

138. *Stephanostomum seriolae* ~~n. sp.~~

(Fig. 138) Yamaguti, 1970

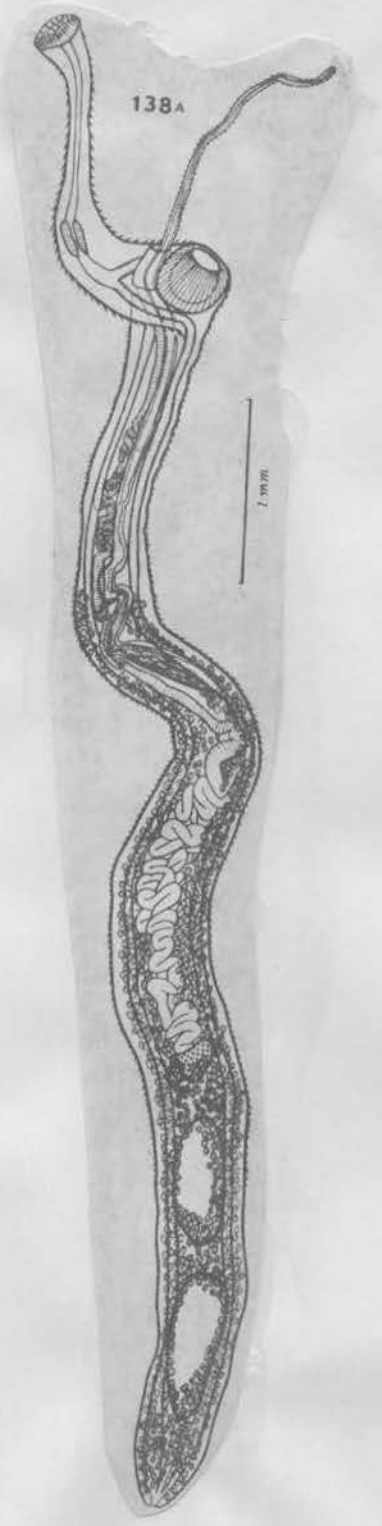
HABITAT: Intestine of *Seriola dumerilii* (local name "kahala"); Hawaii.

HOLOTYPE: U. S. Nat. Mus. Helm. Coll., No. 63737.

DESCRIPTION (based on 16 whole mounts): Body long, slender, 6.6-15.3 mm long, up to 0.4-0.65 mm wide in posterior third; forebody very much attenuated, especially in prepharyngeal region, spined except for a narrow subapical zone; spines arranged in quincunx, up to 40 μ long in midregion of forebody, whence they diminish in size toward the two suckers; hindbody subcylindrical, covered throughout with small spines. Eyespots rudimentary. Oral sucker terminal, shallow, 0.08-0.2 × 0.17-0.36 mm, with two uninterrupted alternate rows of 37-42 simple spines up to 80 μ long; oral spines shorter than aboral spines just as illustrated by me for *Echinostephanus hispidus* (=*Stephanostomum hispidum*). Prepharynx 0.25-1.4 mm long; pharynx subcylindrical to pyriform, 0.17-0.28 × 0.08-0.21 mm; esophagus short; ceca opening into excretory vesicle at posterior extremity. Acetabulum prominent, 0.35-0.45 mm in diameter, situated at or near middle of anterior third of body.

Testes elliptical or sausage-shaped, 0.6-1.1 × 0.18-0.38 mm, tandem, contiguous or separated a little, close to posterior extremity. Cirrus pouch greatly elongated claviform, very variable in length according to state of contraction, 1.8-5.5 mm long lineally, 0.11-0.24 mm wide posteriorly, extending into middle third of body, but usually not quite reaching to midbody; seminal vesicle up to 80-200 μ wide, occupying posterior swollen portion of cirrus pouch; pars prostatica differentiated, with prostate cells in the space inside cirrus pouch. Ejaculatory duct muscular, winding, covered inside with papilliform spines, joining metraterm to form hermaphroditic duct posterior to acetabulum. Hermaphroditic duct very variable in length (0.3-1.3 mm) according to states of contraction. Cirrus may project into metraterm, or more frequently out of genital pore, attaining maximum length of 5 mm, armed with minute spines throughout or at basal portion alone. Genital pore immediately pre-acetabular.

Ovary subglobular to ovoid, 0.24-0.4 × 0.15-0.3 mm, slightly pretesticular, in anterior part of caudal third of body. No seminal receptacle. Laurer's canal forming a loop just before opening dorsal to ovary near its posterior end. Uterus winding in median field; metraterm penetrating cirrus pouch at its anterior end to form hermaphroditic duct, through which the ejaculatory duct is evaginated. Mature eggs oval, 54-58 μ long by 32-33 μ wide in life; collapsed eggs 51-72 × 30-40 μ in balsam mounts. Vitelline gland circumcecal, commencing shortly anterior to midbody, usually coinciding with posterior portion of cirrus pouch, confluent between ovary and anterior testis, between two testes, and in posttesticular area; vitelline reservoir anterior or anterolateral to ovary.



Excretory system not made out.

DISCUSSION: This species differs from the most closely related *Stephanostomum hispidum* (Yamaguti, 1934) in the smaller number of circumoral spines and the smaller eggs.

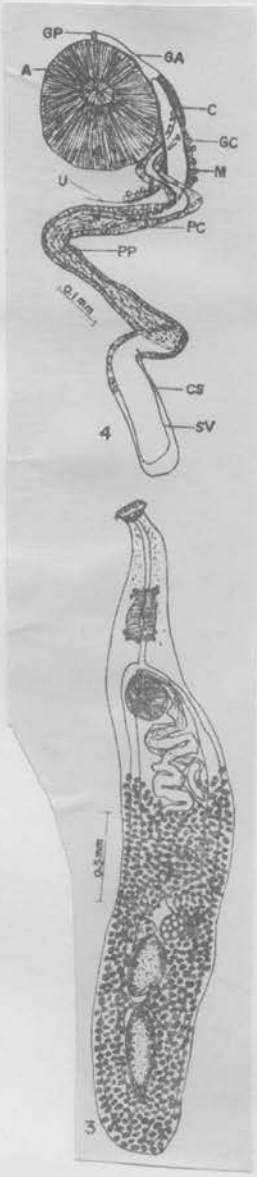
Stephanostomum sierraleonensis

Stephanostomum sierraleonensis ~~n.sp.~~ Fischthal & Williams, 1971. (Figs. 3, 4)

Description (based on single adult worm) : Body elongate, widest at anterior part of vitellaria, narrowing greatly preacetabularly, tegument spined to level of posterior testis, anterior extremity truncate, posterior extremity round, 3,655 by 650. Eye spot pigment granules scattered from level of oral sucker to caecal bifurcation. Forebody 945 long ; hindbody 2,440 long ; forebody-hindbody length ratio 1:2.6. Oral sucker terminal, truncate anteriorly, round posteriorly, 102 by 107. Circumoral spines 27, in 2 alternating ventrally interrupted rows ; ventral oral spines 40–43 by 5–6, ventral aboral spines 29–32 by 4–5, dorsal oral spines 70–72 by 10–11, dorsal aboral spines 43–47 by 7–8. Acetabulum longitudinally elongate, some muscles degenerated and replaced by hyaline material, 270 by 237. Sucker length ratio 1 : 2.65, width ratio 1 : 2.12. Prepharynx thick walled, muscular, 455 long ; pharynx pyriform, muscles of posterior half partly degenerated and replaced by hyaline material, 235 by 172, gland cells located anterolaterally and posteriorly; oesophagus thick walled, muscular, 172 long ; caecal bifurcation just preacetabular ; caeca conspicuously cell lined, narrow anteriorly, widening posteriorly, extending to near posterior extremity ; uroproct not determinable.

Gonads tandem, probably contiguous or nearly so (as testes appear to be shrunken due to dehydration during preparation of whole mount slide), smooth. Testes 2, longitudinally elongate, median, intercaecal ; anterior testis 360 by 192, lying 1,225 postacetabular ; posterior testis 500 by 182, lying 1,640 postacetabular, posttesticular space 300 long. Vas efferens emerging from anterodorsal part of each testis, duct from anterior testis expanded twice into seminal reservoirs lying sinistral to ovary and short distance preovarian, duct from posterior testis expanded once dextromedian to intertesticular space. Cirrus sac elongate, narrow, slightly thick walled, winding considerably, longitudinal extent 765, 106 wide posteriorly ; commencing 560 postacetabular, 510 preovarian, ventral to right caecum, slightly more than ½ distance between acetabulum and ovary, overlapping beginning of vitellaria. Seminal vesicle elongate, saccular, curved, slightly thick walled, entirely postacetabular, 390 by 87. Pars prostatica very long, winding, conspicuously lined with compact layer of large elongate cells, surrounded by few prostate cells. Cirrus dextral to acetabulum, spined internally, joining metraterm dextral to midlength of acetabulum to form tubular genital atrium leading to median, preacetabular genital pore.

Ovary dextromedian, 170 by 145, lying 1,070 postacetabular. Ootype complex ventrolateral to ovary. Vitellaria extensive, commencing 250 postacetabular and 820 preovarian ; at gonadal level follicles in lateral fields ventral, lateral, dorsal and median to caeca, filling posttesticular space, anterior to ovary follicles confluent ventrally and dorsally to completely encircle posterior half of uterus. Uterus coiled between ovary and acetabulum, sperm in proximal coils. Metraterm thick walled, muscular, spined, L-shaped in ventral view, commencing postacetabular, shorter than cirrus sac, ascending dorsal to cirrus containing part of cirrus sac, surrounded by gland cells. Eggs thin shelled, operculate, yellowish, 7 measuring 68–73 by 51–56.



Excretory bladder obscured by vitellaria; pore terminal.

Host: *Galeoides decadactylus* (Bloch), threadfin (Polynemidae).

Location: Small intestine.

Locality: Sierra Leone River estuary near Bullom, Sierra Leone.

Date: November 1967.

Holotype: USNM Helm. Coll. No. 70793.

Discussion: Only 3 species of *Stephanostomum* Looss, 1899, are known in which the 2 rows of circumoral spines are completely interrupted ventrally: *S. cesticillum* (Molin, 1858) Looss, 1899; *S. bicoronatum* (Stossich, 1883) Manter, 1940; *S. megacephalum* Manter, 1940. Our new species differs from them in having the preovarian vitelline fields confluent ventrally and dorsally. Our form appears closest to *S. megacephalum*, differing further in having the acetabulum more than twice as large as the oral sucker, the oesophagus many times longer, and the cirrus sac winding considerably.

Stephanostomum sp. Overstreet, 1969

Stephanostomum sp.
Figure 34 Overstreet 1969

Host: *Opsanus beta* (1 of 6).
Site: Intestine.
Specimen deposited: U. S. N. M. Helm. Coll. No. 71317.

Discussion: Linton (1901:468-469) reported *Stephanostomum tenue* from *Opsanus tau* and referred to the original description (Linton, 1898:535-536). His identification probably is incorrect because he considered more than one species as *S. tenue*. The present specimen may well be a new species. It has the following characteristics: Body 1.0 long. Oral sucker 0.13 wide. Acetabulum 0.18 wide. Sucker ratio 1:1.33. Forebody 27% of body length. Apparently 38 oral spines. Prominent eyespots at level of anterior of pharynx. Esophagus about as long as pharynx. Uroproct present. Ovary 0.11 from acetabulum, with cirrus sac extending ⅔ that distance. Prostatic vesicle short. Posttesticular space 12% of body length. Gonads nearly contiguous. Vitellaria extending from midacetabular level to posterior end of body; with follicles not shown in Figure 34 dorsal and ventral to gonads; meeting dorsally between testes, but not between ovary and anterior testis as in *S. dentatum* from flounders (Manter, 1947: 308). Longest collapsed eggs 68 by 31 microns.

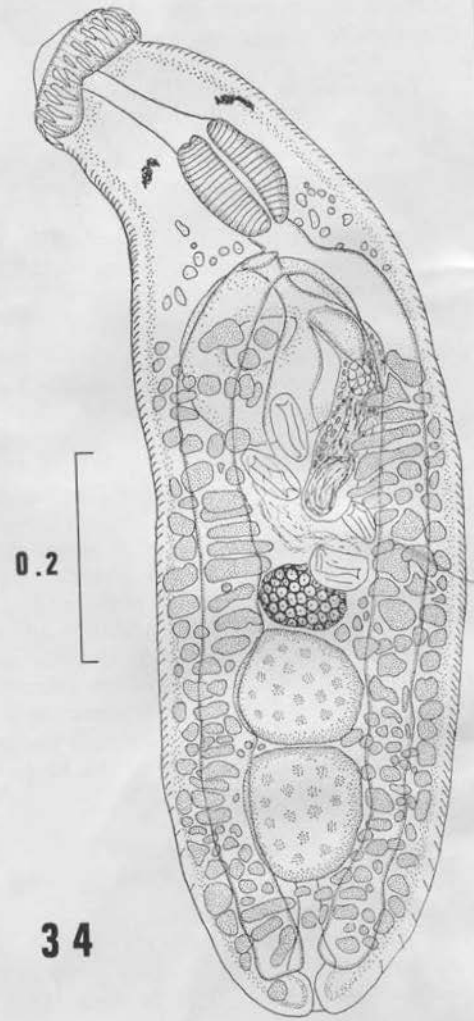


Figure 34. *Stephanostomum* sp., dorsal view, vitelline follicles dorsal and ventral to gonads omitted.

Martin, 1938

Stephanostomum tenue (Linton, 1898) ~~Linton, 1940~~

Originally described from the striped bass, Roccus lineatus (Roccus seat) from Woods Hole.

"There appear to be 21 spines in each row surrounding the mouth, the spines of one row alternating with those of the other. Length of oral spines 0.051 mm. Vitellaria voluminous, peripheral in posterior region (from figure from about the level of the acetabulum).

Living specimen: length 2.9 mm., width at acetabulum 0.6 mm., oral sucker 0.26; acetabulum 0.38 mm., Total length varied from 1.4 to 3.6 mm. eggs 88 by 44 µ.

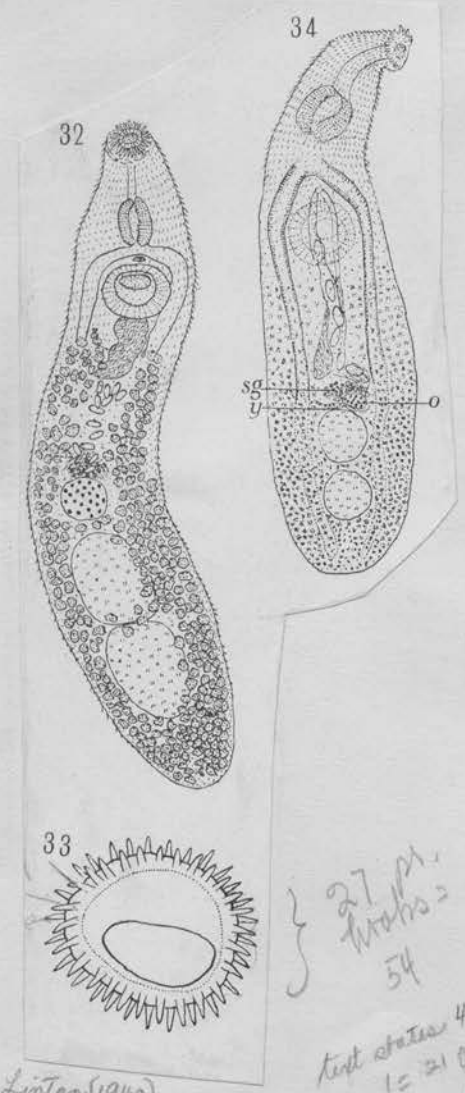
42 spines

Linton (1905) reported this species from 10 fishes at Beaufort. In 1940 he reported it from the following fishes at Woods Hole: Roccus saxatilis; Morone americanus ; Ammodytes americanus; Hemitripterus americanus; Menticirrhus saxatilis; Opsanus tau.

In his 1940 description he states 42 spines were counted in distomes from Roccus and Morone and about 48 in distomes from Hemitripterus. Added data:

prepharynx at least as long as pharynx

Linton describes specimens from different hosts separately Since the oral spines were lost in some material it cannot be certain he was dealing with this species. Regarding material from the type host, Roccus, he says: length 4.62 , widht 0.56 oral sucker 0.21, acetabulum 0.33; eggs 84 by 40; oral spines 42.



from Linton (1940)

Reported by Nigrelli & Atz (1943) from Spheroides maculatus at Sandy Hook, N.J.

more than one species

Figs. from Linton, 1940:
32. from Hemitripterus, also
33. 34. from Ammodytes.

more than one species

1.46
26 | 38
26
120
104
160

27 spines
2 sides
54 ?

text states 42 spines
(= 21 pairs)
also 48 spines

Stephanostomum tenue (Linton, 1898) Martin, 1938

Distomum tenue Linton, 1898.
Distomum tenue tenuissime Linton, 1898.

Hosts: *Lutjanus apodus* (2 of 3)*; *Lutjanus mahogoni* (1 of 2)*; *Trachinotus falcatus* (2 of 6)*.

Site: Near or in rectum.

Discussion: Manter and Van Cleave (1951:328) noted that Linton (1940) might have included more than one species in his description of *Stephanostomum tenue*. The specimens I designate as *S. tenue* have a sucker ratio of 1:1.5, which is apparently typical for the species. The ratio in the specimen from *Lutjanus mahogoni* is 1:1.2, but the oral sucker is expanded. The eggs, however, are not longer than about 72 microns, whereas Linton (1940:57; 1889:536) reported 0.084 by 0.04 and 0.088 by 0.044 for eggs from specimens of *Roccus saxatilus* (= *R. lineatus*), the type host. The vitellaria in the two specimens from *L. apodus* extend to the acetabular level as in Figure 7, Plate LII (Linton, 1898) and vitellaria in the two specimens from *Trachinotus falcatus* and one from *L. mahogoni* do not extend to the acetabulum, as Linton noted later (1940:57) for another worm from *R. saxatilus*. Three specimens have 42 oral spines and a fourth 40 or 42.

Anderson (1965:71) reported *S. tenue* from the kidney of *Pomatomus saltatrix* from Sandy Hook, New Jersey, to Marathon, Florida but did not state whether it was a metacercarial or adult stage.

Overstreet, 1969

Acanthocolpidae

Fischthal & Thomas, 1968

***Stephanostomum trachinoti* n. sp.**

(Fig. 3)

HOST: *Trachinotus glaucus* (L.), palometa (Carangidae).

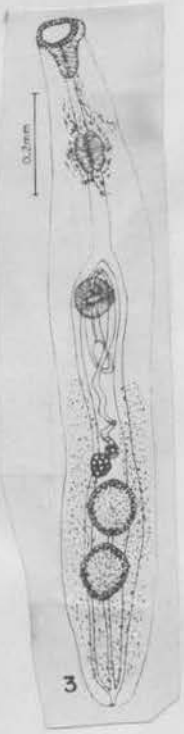
HABITAT: Small intestine.

LOCALITY: Cape Coast, Ghana.

DATE: 20 April 1966.

SPECIMEN: USNM Helm. Coll. No. 63334 (holotype).

DIAGNOSIS (based on single immature specimen): Body 1,344 by 210 (preacetabular), extremities round. Tegument spined to anterior testis level, extending anteriorly up to circumoral spines. Eyespot pigment abundant, scattered from oral sucker to midlength of esophagus. Forebody 505 long, hindbody 745 long. Oral sucker 125 by 94, elongate, funnel-shaped. Circumoral spines numbering 80–84, in two alternating, uninterrupted rows, 5–7 by 4–5, oral spines smaller than aboral. Acetabulum 94 by 102, center at level of anterior two-fifths of body length. Sucker length ratio 1:0.75. Prepharynx 118 long, thick-walled muscular; pharynx 60 by 54, oval, four-lobed anteriorly; esophagus 184 long, lined with cells continuous with those of ceca, longer than prepharynx or pharynx; cecal bifurcation 12 preacetabular; ceca long, cell-lined, terminating 46 from posterior extremity, opening into excretory bladder.



Gonads tandem, 4–5 apart, filling interceca space, may overlap ceca ventrally. Testes two, smooth; anterior testis 118 by 93, posterior testis 115 by 103; posttesticular space 203 long. Cirrus sac 198 by 46, median, commencing 82 postacetabular, 48 previtellarian, 168 preovarian; containing small seminal vesicle, short pars prostatica surrounded by prostate cells, and long, spined cirrus. Cirrus sac uniting with metraterm preacetabularly, forming short genital atrium. Genital pore median, just preacetabular.

Ovary 45 by 38, smooth, lying 250 postacetabular. Ootype complex anterodextral to ovary. Uterus with little coiling, ascending ventral to proximal part of cirrus sac. Metraterm 140 by 20, thick-walled, muscular, appearing spined, shorter than and dextral to cirrus sac, commencing 31 postacetabular. Vitellaria commencing 130 postacetabular, 120 preovarian; follicles very small, ventral, lateral and dorsal to ceca, invading interceal space slightly, filling posttesticular space.

Excretory bladder long, narrow, extending dorsally to midlength of anterior testis, pore terminal.

DISCUSSION: This form could not be keyed to any species given in the keys by Manter and Van Cleave (1951) and Caballero (1952). The unique combination of characteristics prompted us to describe it as a new species even though immature. It differs from all species, except *S. multispinosum* Manter, 1940, in having 80–84 circumoral spines. The latter species differs in the oral sucker being cupuliform and smaller than the acetabulum, in having a pyriform pharynx and a short esophagus, in the vitellaria extending to the acetabulum, and in the cirrus sac extending a considerable distance postacetabular.

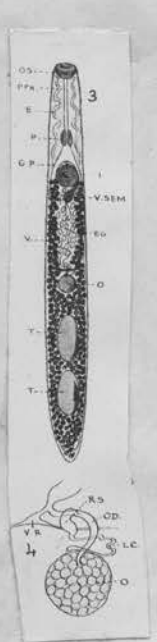
Stephanostomum triglae (Lebour, 1908) Dawes, 1946

Stephanochasmus triglae Lebour 1908

One specimen from the grey gurnard. Probably the species mentioned by Odhner from Trigla gurnardus. When contracted it resembles S. baccatus but the armature of the head is different and the ratio of the suckers.

Length 3.2 mm. to 4.8 mm.
Width 0.74 to 0.5 mm.
Head spines slightly damaged, but there were much fewer than 56 and more than 42, arranged in two rows.
The upper spines (length 0.04 mm.) are slightly larger than the lower (0.36 mm.), rather thick and heavy.
Oral sucker 0.26 mm. wide and 0.14 mm. long
Ventral sucker 0.28 mm. round.
Prepharynx short when contracted 0.6 mm., long when ext.
Pharynx 0.20 mm. long. Very short esophagus.
Testes oval, 0.52 mm. long. Seminal vesicle short, pear-shaped, enclosed in a short club-shaped cirrus sac which only curves slightly. It reaches behind the ventral sucker for a distance of 0.3 mm.
Ovary globular separated from the testis by a distance of 0.20 mm. Long L. canal with a swelling near its junction with the oviduct, looking like a sem.rec.
Eggs 99 by 56 u.
Vitellaria reach from the posterior end to the level of the hind part of the ventral sucker. Not interrupted at testes and filling the space behind the testes.

Reference: Lebour, Marie 1907 Fish Trematodes of the Northumberland Coast. Northumberland Sea Fisheries Committee Report for the year 1907. p. 47-48



7/10mm Lebour 1908

Tristephanes

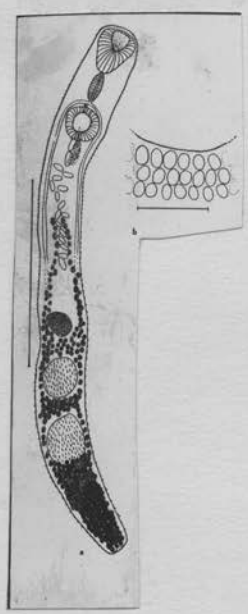
Stephanostomum tristephanum ~~n. sp.~~ MacFarlane, 193

Host: Ophidon elongatus Girard (Ling cod)
Position: Intestine

Long slender, 2.6 to 3.1 long by 0.29 to 0.36 wide. Suckers of equal size, 0.16 to 0.21. Cuticula armed with small spines most numerous anterior to acetabulum. Oral sucker surrounded by at least 140 spines arranged in three rows, anterior portion of body evidently contracted. Prepharynx short. Pharynx nearly globular, 0.078 in diameter. Oseophagus short 0.18. Intestinal bifurcation in region of acetabulum; crura extend to end of body. Each crux with filamentous projections into lumen. Indications of auroproct were observed. Vitelline follicles small and profuse, uniterrupted posterior to ovary, anterior to ovary lateral, anterior limit posterior to acetabulum. Ovary round smooth, 0.12 in diameter. Uterus anterior to ovary. Eggs 0.078 to 0.084 long by 0.039 to 0.041 wide. Testes globular in posterior part of body. Seminal vesicles posterior to acetabulum. Cirrus sac 0.24 long. Cirrus with projections into lumen. Genital pore ventral, immediately anterior to acetabulum.

British Columbia

(140)?



139. *Stephanostomum uku* ~~n. sp.~~

(Fig. 139) Yamaguti, 1970

HABITAT: Intestine of *Aprion virescens* (local name "uku"); Hawaii.

HOLOTYPE: U. S. Nat. Mus. Helm. Coll., No. 63738.

DESCRIPTION (based on 14 mature specimens): Body slender, subcylindrical, 2.4-7.2 mm in length, up to 0.2-0.63 mm wide in caudal third. Forebody spined from behind oral sucker; spines up to 35 μ long in region between eyespots and pharynx; hindbody sparsely spined posteriorly. Oral sucker terminal, discoid, 0.08-0.15 × 0.14-0.28 mm. Circumoral spines 35, in two, uninterrupted, alternating rows, subequal, up to 70 μ long by 14 μ wide; prepharynx unusually wide, 0.23-1.15 mm long; pharynx subcylindrical, 0.1-0.2 × 0.07-0.16 mm; esophagus 0.04-0.2 mm long; ceca terminating blindly at extreme posterior end of body. Acetabulum prominent, 0.18-0.3 × 0.14-0.3 mm, at posterior end of anterior third of body.

Testes oval, 0.24-0.6 × 0.11-0.24 mm, tandem, close to each other near posterior extremity. Cirrus pouch 0.5-1.5 mm long lineally, up to 40-100 μ wide posteriorly, reaching to equatorial region, joining metraterm behind acetabulum; pars prostatica tubular, surrounded by prostate cells; ejaculatory duct very long, winding anteriorly, covered inside with minute spines; hermaphroditic duct 0.2-0.4 mm long. Genital pore immediately preacetabular.

Ovary subglobular, 0.09-0.19 × 0.07-0.18 mm, slightly pretesticular, nearly median, situated in anterior part of caudal third of body or a little more anteriorly. Laurer's canal U-shaped, opening dorsal to ovary. Uterus winding forward in median field; metraterm well differentiated. Eggs oval, more tapered at antiopercular pole than at opercular pole, 65-79 × 32-47 μ in balsam mounts, 70-75 × 41-45 μ in life. Vitellaria commencing in midregion, coinciding with posterior portion of cirrus pouch, may or may not be confluent in median line both dorsally and ventrally in posterior third of body; vitelline reservoir immediately postovarian, may be median or submedian. Excretory system not made out.

DISCUSSION: This species differs from the most closely related *Stephanostomum hawaiiense* n. sp. from *Caranx* of Hawaii, which has the same number of circumoral spines, in the cirrus pouch and ejaculatory duct being much longer, and in the Laurer's canal being U-shaped.

140. *Stephanostomum yagara*

(Fig. 140) Yamaguti, 1970

HABITAT: Intestine of *Fistularia petimba* (Japanese name "yagara"); Hawaii.

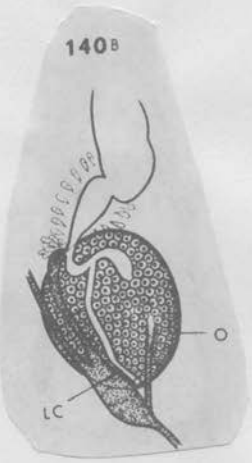
HOLOTYPE: U. S. Nat. Mus. Helm. Coll., No. 63739.

DESCRIPTION (based on five whole mounts): Body subcylindrical, slender, 8.2-11.0 mm long, 0.4-0.52 mm wide at level of anterior or posterior testis, somewhat attenuated in neck region. Eyespots indistinct. Body spines wedge-shaped, up to 50 μ long at pharyngeal level, gradually smaller posteriorly in hindbody. Oral sucker terminal, fingerbowl-shaped, 0.55-0.65 mm in transverse diameter; circumoral spines blunt-fusiform, 88-116 X 21-33 μ, 52-56 in number, in two, uninterrupted, alternating rows; dorsal ones slightly longer than ventral ones. Prepharynx very wide, 0.7-0.85 mm long, bulbous and thick-walled at very beginning, thin-walled elsewhere. Pharynx muscular, 0.25-0.27 X 0.2-0.26 mm; esophagus 0.4-0.5 mm long; ceca terminating blindly at posterior extremity. Acetabulum prominent, 0.3-0.36 mm in diameter, at about middle of second sixth of body.

Testes elliptical to fusiform, 0.7-0.9 X 0.32-0.48 mm, separated by vitellaria; anterior testis at posterior part of middle third of body, posterior one in anterior half of posterior third of body. Cirrus pouch claviform, with membranous wall, extending backward to anterior end of vitellaria at junction of anterior with middle third of body; seminal vesicle up to 0.2-0.22 mm wide, winding anteriorly; pars prostatica and ejaculatory duct not well distinguishable; hermaphroditic duct 0.2-0.35 mm long, unarmed, opening immediately in front of acetabulum.

Ovary subglobular, 0.25-0.32 X 0.2-0.26 mm, median, in midregion of body. Laurer's canal opening dorsal to posterior end of ovary. Uterus running forward windingly in median field between ovary and seminal vesicle, and then straight alongside cirrus pouch. Eggs oval, 55-63 X 34-42 μ in life. Vitelline follicles circumcecal, commencing at junction of anterior with middle third of body, just at level of posterior end of cirrus pouch. Vitelline reservoir immediately postovarian. Excretory vesicle reaching to posterior end of ovary; pore terminal.

DISCUSSION: This species agrees with *Stephanostomum fistulariae* Yamaguti, 1940 from Japanese *Fistularia petimba* in gross anatomy and the characters of the circumoral spines, but differs distinctly in the body being definitely longer (8.2-11 mm vs. 2.4-4.8 mm), in the ovary and testes being wide apart one from another, in the anterior extent of vitellaria, and in lacking a cloaca. The specific name refers to the Japanese name of the host.

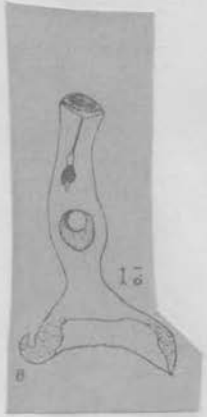


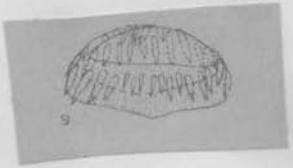
6. *Stephanostomum* sp.
(Figs. 8 to 9)

Host: *Acanthostracion tricornis* (Linn.); cowfish; family Ostraciidae.
Incidence of infection: In 1 of 1 host.
Location: Encysted on pericardial membrane.
Locality: Bayboro Harbor, Tampa Bay, Florida.

The immature worm from *A. tricornis* possesses 36 peribuccal spines and a sucker ratio of 1:0.94. Immature *Stephanostomum* spp. have been reported from the flesh, fins and liver of some marine fishes. This is the first record of a *Stephanostomum* immature from the pericardial membrane of a fish.

Ten species of *Stephanostomum* with 36 peribuccal spines have been named. These species are: *S. carangium* (Yamaguti, 1951) Caballero, 1952; *S. casum* (Linton, 1910) MacFarlane, 1934; *S. cesticillum* (Molin, 1858) Looss, 1899; *S. ceylonicum* (Lühe, 1906) Caballero, 1952; *S. coryphaenae* Manter, 1947; *S. ditrematis* (Yamaguti, 1939) Manter, 1947; *S. minutum* (Looss, 1901) Manter, 1940; *S. nipponicum* Yamaguti, 1953; *S. pristis* (Deslongchamps, 1824) Looss, 1901; and *S. sentum* (Linton, 1910) Manter, 1947. Of these, *S. casum*, *S. coryphaenae*, *S. ditrematis* and *S. sentum* are the only species of the genus known from this continent. With the exception of *S. ditrematis*, our immature *Stephanostomum* specimen from *A. tricornis* differs from all of these species by possessing an acetabulum which is smaller than the oral sucker. *S. casum*, *S. coryphaenae*, and *S. sentum* may perhaps be further eliminated by the arrangement and size of the peribuccal spines. The shape, size and arrangement of the peribuccal spines suggest *S. ditrematis* which is a parasite of carangids in the Tampa Bay area. In addition, the specimens of *S. ditrematis* collected from this area possess a sucker ratio of from 1:0.098 to 1:1.2, almost within the ratio given above for our immature *Stephanostomum* sp. This report may represent an accidental larval infection, as it would be difficult to conceive of carangids feeding on trunkfishes. It may also be that our larval specimen is a species different from *S. ditrematis*. For this reason, it is listed as *Stephanostomum* sp.

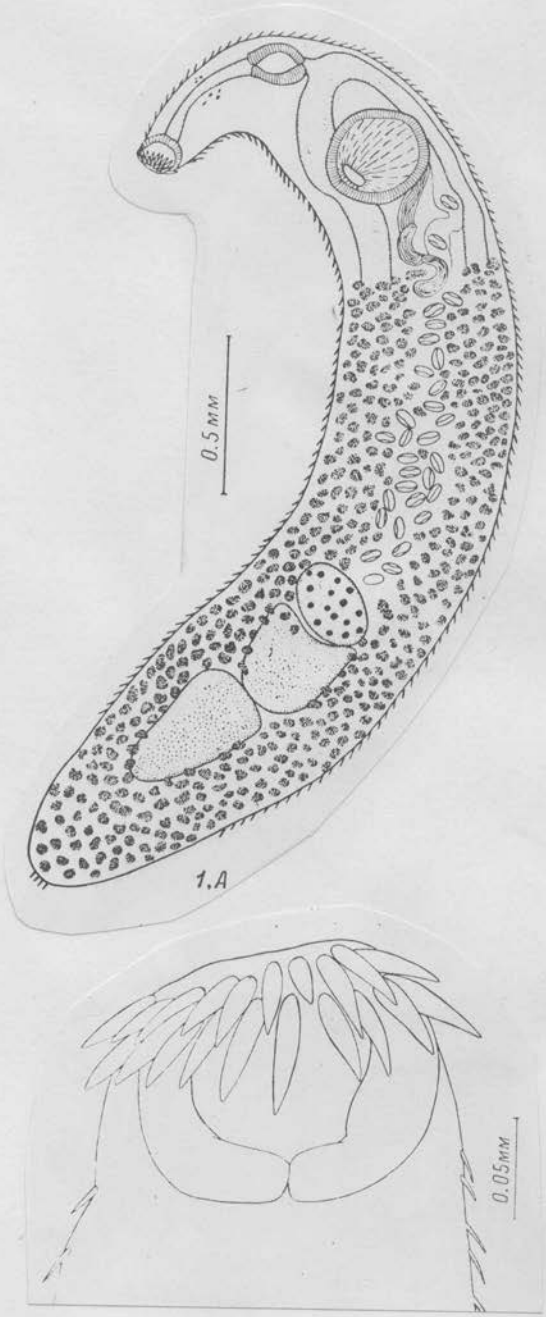




FROM: SOGANDARES-BERNAL & HUTTON, 1959

Stephanostomum sp. Zhukov, 19?? undated reprint g.v.

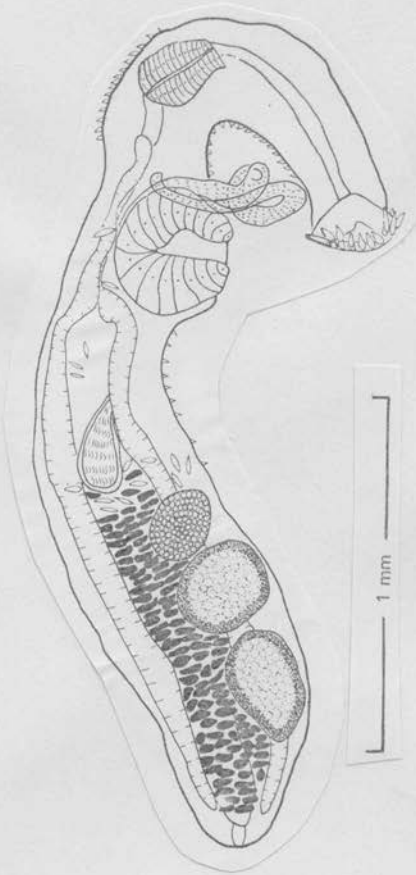
Ex. Triacanthus brevirostris
Loc. India



Stephanostomum sp. From Al-Yamani and Nahhas 1981

Host:	*Lutjanus coccineus* (Cuvier and Valenciennes) $\frac{1}{5}$
Site:	Intestine
Locality:	Al-Fahaheel
Deposited specimen:	U.O.P. Parasitol. Col.: K-8-2-3-78

Description and measurements are based on a single mature specimen. Body elongate, 3.150 mm long, 0.420 mm wide at level of ventral sucker. Cuticle spinose, spines large in forebody, becoming smaller and sparse posteriorly on ventral side of hindbody and absent dorsally and laterally from near anterior level of ovary to posterior end of body. Eye-spot pigments present. Oral sucker 0.150 mm long, 0.250 mm wide, with 30 perioral spines, 55-66 µm long, 22 µm wide at base, alternating in two rows of 15 each: ventral sucker 0.360 mm long, 0.300 mm wide; sucker ratio about 1:1.65. Prepharynx 0.600 mm long; pharynx 0.220 mm long, 0.190 mm in greatest width: oesophagus about three-fourths length of pharynx; intestinal bifurcation immediately anterior to acetabulum, caeca extending to near posterior end of body; no connections to excretory vesicle evident. Gonads in posterior third of body; testes two, tandem; anterior testis 0.247 mm long, 0.267 mm wide: posterior testis 0.300 mm long, 0.218 mm wide separated by a few vitelline follicles; cirrus sac thick-walled, extending three-fourths distance from acetabulum to ovary, containing ovoid seminal vesicle, 0.210 by 0.090 mm, prostatic duct and very long protruding spiny cirrus. Ovary globular, 0.160 mm long, 0.180 mm wide, anterior to, and separated from anterior testis, by a few vitelline follicles. Uterus preovarian, joining male duct dorsal to midlevel of acetabulum. Genital atrium tubular, pore immediately preacetabular. Eggs collapsed, 55-72 by 22-30 µm. Vitellaria extending from near posterior level of ventral sucker to posterior end of body. Excretory vesicle sac-like extending to at least posterior level of ovary; pore terminal.



Discussion

This species is not named because of limited material and difficulty in determining degree of variations when comparing it with the large number of species (at least 70 described to date) in the genus *Stephanostomum*.

Stephanostomum metacercaria
Host: Cypselurus babiensis (C).
Site: cyst on gill arch.

The single acanthocolpid metacercaria found in this study had an oral sucker that was smaller than the acetabulum and 48 perioral spines in 2 uninterrupted rows.

CURAÇAO; FROM NAHHAS + CABLE, 1964

MONORCHISTEPHANOSTOMUM Vigueras, 1942

Body elongated, tapered anteriorly, oral sucker surrounded by a crown of uninterrupted, double row of hooks; prepharynx long; pharynx pyriform; esophagus short; acetabulum near the oral sucker; genital pore "delante del" acetabulum; a single testis, elongated longitudinally and located a short distance from the posterior end of the body; ovary spherical, smooth, pretesticular; vitellaria abundant from a little below the acetabulum to posterior end. Eggs "pequeños" and few.

Type species: M. gracile Vigueras, 1942 from the barracuda Sphiraena barracuda (Walbaum), north shore of Cuba.

Judging from measurements given only one specimen was studied. It may have represented an abnormality of some species which normally had two testes.

Vigueras 1942
Notas helminthogicas
Univ. Habana -
Pub. Trimestral. 193-223.

Yamaguti (1959) considers this genus a synonym of Stephanostomum. He noted that being based on a single specimen it might be an abnormality.

MONORCHISTEPHANOSTOMUM Pérez Vigueras, 1942.

Diagnosis. Tremátodos de cuerpo largo, plano, acintado, de bordes paralelos; cuticula provista con recias espinas, las cuales son más abundantes en la extremidad cefálica; la región peribucal lleva una doble corona continua de espinas dispuestas alternativamente. Ventosa oral grande, cupuliforme; acetábulo situado en la parte anterior del cuerpo, inmediatamente por detrás de la bifurcación intestinal, esférico y mayor que la ventosa oral. Boca subterminal; prefaringe larga y angosta; faringe globoide, musculosa, mayor que la ventosa oral pero menor que el acetábulo; esófago corto; ciegos intestinales angostos y extendiéndose hasta el extremo posterior del cuerpo.

Poro reproductor poco aparente, situado en la parte media del borde anterior del acetábulo; seno genital largo, tubuloso, principia por detrás del acetábulo. Existe un solo testículo grande, ovoide, de bordes lisos y situado en el área intercecal de la parte posterior del cuerpo; bolsa del cirro larga, intercecal, media, tubulosa; en su parte posterior contiene una vesícula seminal no dividida y en su parte anterior la glándula prostática y el cirro espinoso; se une a la vagina para formar el seno genital. Ovario esférico, pequeño, de contornos lisos, situado en el área intercecal media de la parte posterior del cuerpo, por delante del testículo; glándula de Mehlis pequeña y difusa; conducto de Laurer presente; no hay receptáculo seminal; el útero es intercecal, extenso, se extiende entre el ovario y la vesícula seminal; vagina robusta, espinosa, paralela a la bolsa del cirro y menor que ella, a la que se une para formar el seno genital; huevecillos poco numerosos, operculados, de cáscara amarilla y delgada.

Folículos vitelinos abundantes, grandes, se disponen principalmente en dos bandas laterales que se extienden desde el nivel del seno genital hasta el borde posterior del cuerpo, ocupando las regiones dorsal y ventral; dejan un área media angosta libre en donde se alojan los órganos reproductores; por detrás del testículo posterior no hay folículos vitelinos. El aparato excretor está formado por una vesícula excretora tubulosa, larga, que se extiende hasta el nivel del ovario.

Especie tipo: *Monorchistephanostomum gracile* Pérez Vigueras, 1942.

Localización: intestino de peces marinos.

Discusión. Este género es muy semejante a *Stephanostomum Looss*, 1899, pero difiere de él, capitalmente, por la presencia de un solo testículo. Posiblemente, como opina H. W. Manter (comunicación personal), el único ejemplar que ha servido para la creación del nuevo género es un individuo anormal de *Stephanostomum*, pero la validez o invalidez del género creado por Pérez Vigueras quedará dilucidada hasta que se cuente con más ejemplares del parásito colectados en el hospedador tipo, y se pueda hacer una nueva descripción.

Monorchistephanostomum gracile Pérez Vigueras, 1942.
(Figs. 119 y 120.)

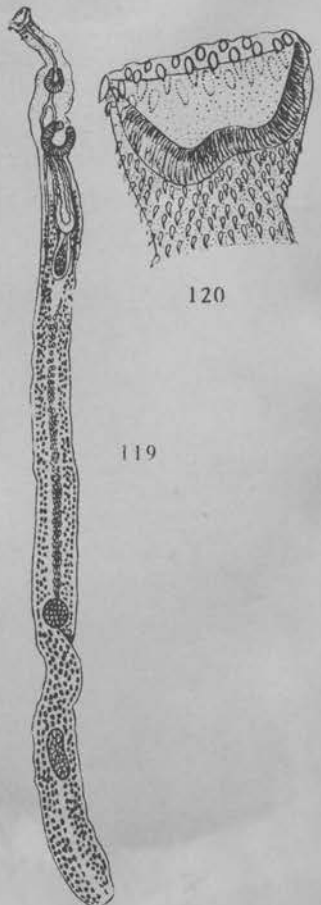
La descripción de esta especie, y también del género, fué hecha por Pérez Vigueras a partir de un solo ejemplar colectado en el pez marino conocido con el nombre vernáculo de "picuda"; nuestra redescripción fué hecha sobre el genotipo, único ejemplar que se conoce en la actualidad.

Son parásitos de cuerpo largo, que miden 12.500 mm. de largo por 0.650 mm. de ancho; el extremo anterior es angosto, redondeado, y el posterior también redondeado pero más ancho; la cuticula está densamente poblada con espinas, siendo más abundantes en la parte anterior, y se van haciendo escasas a medida que avanzan hacia el extremo posterior del cuerpo, son de base ancha y de vértice a manera de gancho; la región peribucal lleva una doble corona continua de espinas grandes y alternas en número de 48 a 50 y miden de 0.050 mm. a 0.060 mm. de largo por 0.020 mm. de ancho.

La ventosa oral es pequeña, subterminal, cupuliforme, de paredes gruesas y musculosas y mide 0.220 mm. de largo por 0.320 mm. de ancho; el acetábulo es esférico, grande, fuertemente musculoso, está situado por detrás de la bifurcación intestinal y en la parte anterior del cuerpo, a corta distancia del extremo anterior, y mide 0.500 mm. de largo por 0.530 mm. de ancho.

La boca es circular y grande; la prefaringe es larga y angosta y mide 0.600 mm. de largo; la faringe es musculosa, piriforme, menor que el acetábulo pero mayor que la ventosa oral y mide 0.330 mm. de largo por 0.400 mm. de ancho; el esófago es corto, angosto y mide 0.370 mm. de largo; los ciegos intestinales son angostos y se extienden dorsolateralmente hasta el extremo posterior del cuerpo.

El poro reproductor es poco marcado, está situado por delante del borde anterior del acetábulo, es mediano, el único testículo que existe es ovoide, de contornos lisos, grande, está situado en el área intercecal de la parte posterior del cuerpo y mide 0.680 mm. de largo por 0.280 mm. de ancho; la bolsa del cirro es larga, tubulosa, se halla situada en el área intercecal media y mide 2.500 mm. de largo por 0.190 mm. de ancho al nivel de su porción más amplia; dentro de la bolsa del cirro existe una gran vesícula seminal, la que no está dividida y mide 0.650 mm. de largo por 0.133 mm. de ancho. Una próstata y el cirro, el cual lleva espinas pequeñas; la bolsa del cirro se une a la vagina por detrás del acetábulo y forma el seno genital, el cual es tubuloso y mide 0.247 mm. de largo. El ovario es esférico, de contornos lisos, está situado en el área intercecal media de la parte posterior del cuerpo, pretesticular y mide 0.340 mm. de largo por 0.270 mm. de ancho; la glándula de Mehlis difusa, pequeña y está situada en la parte pósterolateral izquierda del cuerpo; el conducto de Laurer está presente; no existe receptáculo seminal; el útero es preovárico, se extiende desde el ovario hasta el nivel de la vesícula seminal por el área intercecal media y contiene reducido número de asas transversales; la vagina es paralela a la bolsa del cirro, espinosa y se une a ésta para formar el seno genital; los huevos son en número reducido, ovoides, operculados, de cáscara lisa y amarilla y miden 0.080 mm. de largo por 0.045 mm. de ancho.



119

120

FIG. 119. *Monorchistephanostomum gracile*, según Pérez Vigueras.
FIG. 120. Extremidad cefálica de *Monorchistephanostomum gracile*, según Pérez Vigueras.

Los foliculos vitelinos son numerosos, grandes, compactos y se disponen principalmente en dos anchas franjas que se extienden dor-

From Nagaty & Aal, 1962

FAMILY ACANTHOCOLPIDAE

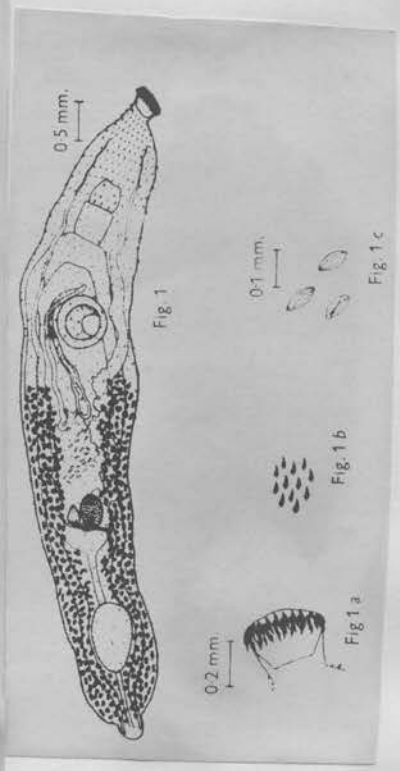
Subfamily Stephanostominae

Monorchistephanostomum gracile (Figs. 1 and 1*a*, 1*b*, 1*c*.)

Description based on whole mount of one specimen from *Lethrinus nebulosus* locally called 'Sho-ora'. Body elongate 8·6 × 1·32 broadest just anterior to the ventral sucker 1·5. Cuticle spinous through the body, the spines decreasing in number and size posteriorly. Oral sucker 0·26 × 0·30 with two complete alternating rows of spines, each row with 20 spines, those of outer row are larger 0·09 by 0·02; those of inner row smaller 0·06 by 0·02. Distance between the oral sucker and the pharynx elongate 0·83, outline of prepharynx not observed. Pharynx 0·38 by 0·44. Oesophagus transversly broadened 0·45 by 0·53. Intestinal caeca terminating blindly near the posterior extremity; caeca broad at the intestinal bifurcation, and tapering posteriorly becoming much narrowed at their posterior ends, in the posterior, bulbous part of the body. Ventral sucker 0·66 by 0·68, submedian and slightly overlapping the left caecum; 2·48 from oral sucker, in the second quarter of body-length. Ratio of oral to ventral suckers 0·4:1.

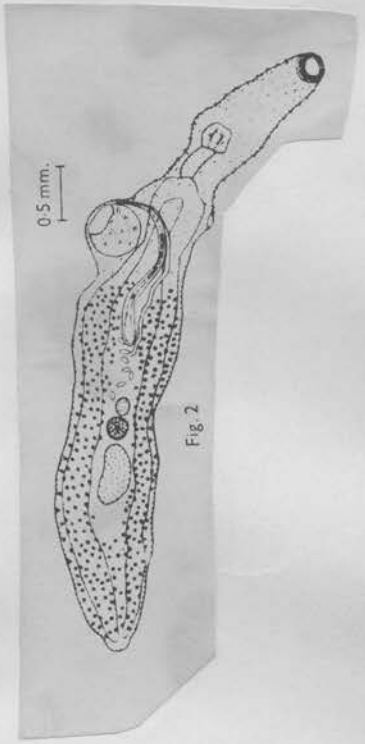
Only a single testis present in the hind-body near the posterior extremity; it is intercaecal, smooth, elongate antero-posteriorly, more or less pear-shaped, measuring 0·89 by 0·51. Cirrus sac slightly sinuous, very long, extending posteriorly to half the distance between the ventral sucker and the ovary. Vesicula seminalis extending anteriorly to near the posterior border of the ventral sucker. Cirrus spinous, narrow, curved, and extending anterior to the ventral sucker. Genital pore immediately behind the bifurcation of the intestine and slightly on the left side.

Ovary intercaecal, ovoid, smooth, slightly on the left side, measuring 0·36 by 0·27, in the third quarter of body length. Receptaculum seminis lateral to the ovary, narrowed anteriorly measuring 0·21 by 0·15. Vitellaria composed of numerous medium-sized irregular follicles, extending laterally from a little anterior to the seminal vesicle to the posterior end of the body, partly extra-caecal and partly overlapping the caeca; vitelline duct just posterior to the ovary and receptaculum seminis and slightly overlapping their posterior ends. Metraterm slightly sinuous, spined anteriorly, genital pore common. Uterus occupying the area between the ovary and the posterior end of the cirrus sac, intercaecal. Eggs small and oval, mean size 0·08 by 0·03. Excretory vesicle Y-shaped, lateral canals extending from the anterior extremity laterally to a level behind the ovary, becoming wider and sinuous posteriorly. Excretory vesicle short, opening by a pore at the posterior extremity.



Monorchistephanostomum gracile (Fig. 2)

Description based on whole mount of one specimen from *Lethrinus mehsena* locally called 'Mehsena'. Body elongate 6·3 × 0·88, anterior end narrow, broad towards posterior end. Cuticle spinous, the spines decreasing in number and size posteriorly. Oral sucker 0·23 × 0·27 with two complete alternating rows of spines; each row with 20 spines and measuring 0·05 by 0·015. Distance between oral sucker and pharynx 0·84, prepharynx not observed. Pharynx 0·27 by 0·29. Oesophagus 0·35 long. Intestinal caeca terminating blindly near the posterior extremity. Ventral sucker 0·56 by 0·50, extracaecal on the right side, forming a bud-like protrusion of the body, 1·89 from oral sucker, in the second quarter of the body. Ratio of oral to ventral suckers 0·5:1.



Only a single testis present, situated in the posterior one-third of the body, intercaecal, smooth, elongate, measuring 0·53 by 0·30. Cirrus sac slightly sinuous, very long, extending posterior to the ventral sucker nearly half the distance between this and the ovary. Vesicula seminalis extending anteriorly to the ventral sucker. Cirrus spinous, narrow, curved, extending anterior to the ventral sucker. Genital pore immediately in front of the ventral sucker on the right side.

Ovary intercaecal, spherical, smooth, nearly median, measuring 0·21 by 0·17, in the third quarter of the body. Receptaculum seminis immediately pre-ovarian, measuring 0·17 by 0·13. Vitellaria composed of numerous, irregular follicles extending laterally almost at mid-level of vesicula seminalis to the posterior end of the body, partly extra-caecal and partly overlapping the caeca. Metraterm slightly sinuous, spinous anteriorly; genital pore common. Uterus occupying the area between the posterior border of the cirrus sac and the receptaculum seminis, intercaecal. Eggs oval, mean size 0·08 by 0·05. Excretory vesicle not seen.

Discussion

This species is re-described here on account of the additions made to the previously published accounts of its morphology the shape of body and the presence of a receptaculum seminis in the two new specimens, this organ being absent in *M. gracile* (Perez Vigueras, 1942); also to record the new hosts mentioned above.

Fig. 2 differs from Fig. 1 in the shape and position of the receptaculum seminis and ovary.

1). ***Monorchistephanostomum gracile*** Vigueras 1942. Figuras 1 y 2.

Hospedero: *Sphiraena barracuda* (Walbaum). Nombre vernáculo, «Picuda».

Localización: Intestinos.

Localidad: Litoral del Norte. Prov. Habana, Cuba.

Lituratura:

Pérez Vigueras, I. 1942.

Notas Helmintológicas — 1. ***Monorchistephanum gracile*** n. gen., n. sp. (Trematoda, Acanthocolpidae), parásito de *Sphiraena barracuda* (Pisces).

Rev. «Universidad de la Habana». Núms. 40-41-42, Enero-Junio, págs. 193-196, figs. 1-2.

Caballero, C. E. 1952.

Revisión de los géneros y especies que integran la Familia *Acanthocolpidae* Lühe 1909. (Trematoda, Digenea).

Rev. Med. Veter. y Parasit. T. XI. Núms. 1-2. Caracas, págs. 163-186, figs. 119-120.

Descripción.—El cuerpo es alargado y delgado, deprimido dorso-ventralmente, con el extremo anterior atenuado, el posterior ligeramente más ancho y redondeado, mide 12.5 mm. de largo por 0.65 mm. de ancho máximo. La cutícula presenta espinas fuertes y numerosas, particularmente en las partes anteriores, haciéndose escasas hacia las partes posteriores del cuerpo. Ventosa oral pequeña, terminal, cupuliforme, de paredes gruesas y musculosa, de 320 micras de ancho por 220 micras de largo, borde peribucal circular, con dos hileras de espinas en círculo no interrumpido, alternas, en número de 48 a 50, cada una de las cuales mide aproximadamente 50 a 60 por 20 micras de largo y grueso, respectivamente. La pre-pharynx es larga y delgada y mide aproximadamente 0.6 mm. de largo, la pharynx es piriforme, musculosa, mide 330 micras de largo por 400 micras de ancho, el oesophagus mide 370 a 390 micras de largo. El acetabulum es saliente, bien desarrollado, musculoso, globuloso, con un diámetro de 500 a 530 micras, los ciegos intestinales son muy estrechos y se extienden hasta el extremo posterior del cuerpo.

El sistema reproductor consta de un solo testículo alargado mediano, situado a cerca de 2 mm. del extremo caudal del cuerpo, mide 680 micras de diámetro antero-posterior por 280 micras de diámetro transversal; el poro genital es poco aparente y se abre inmediatamente por delante del borde anterior del acetabulum, es mediano; la bolsa del cirrus es tubiforme, larga, mide 2.5 mm. de largo; la vesícula seminal es grande, piriforme, mide unas 650 micras de largo; el cirrus es voluminoso, espinoso; no existe receptaculum seminis. El ovarium es globuloso, pequeño, liso, intercecal, mediano, pre-testicular y situado a igual distancia del testículo que éste del extremo caudal del trematode, mide 340 a 360 micras de largo por 270 a 300 micras de diámetro transversal; la glándula de Mehlis, difusa, se encuentra por detrás y

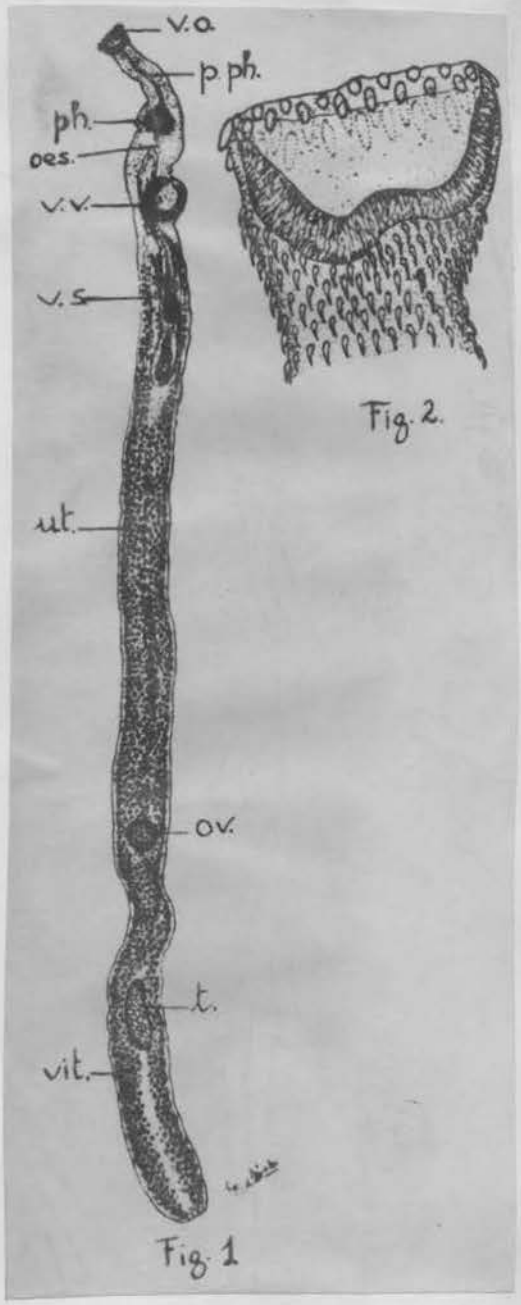


Fig. 2.

Fig. 1

— OVER —

hacia la izquierda del ovarium. El uterus es pre-ovárico, mediano, intercecal, forma pocas asas transversales que ocupan el espacio entre el borde anterior del ovarium hasta cerca del extremo posterior de la vesícula seminal. Las glándulas vitelógenas forman folículos relativamente grandes y numerosos, dispuestos en dos anchas bandas, laterales, una a cada lado, que se extienden desde un poco por detrás del acetabalum hasta el extremo caudal del verme ; los folículos llegan casi a unirse en la línea media del espacio comprendido entre la zona post-acetabular hasta la pre-testicular, en la zona post-testicular se apartan dejando un espacio central de separación. Los huevos son poco numerosos, amarillos, operculados, de 80 por 45 micras.

FROM PEREZ-VIGUERAS (1955)

Fam. Acanthocolpidae Lühe, 1909

7. *Stephanostomum* sp. — metacercaria (Fig. 3c, e)

Host: *Tetraodon lineatus* (Palma).
Location: liver.
Locality: Litoral Playa Larga — Zapata (province Las Villas).
In 1 out of 2 hosts examined one cyst was found.

Description: Globular cyst large, pellucid, measuring 1.387 × 1.401 mm, wall thickness 0.054 mm. Liberated body of metacercaria pear-shaped, with very strong cuticle. Anterior half of body densely covered with small spines, the size of which is gradually making smaller in the backward direction. Length of body 1.36 mm, maximum width 1.020 mm. Two small pigmented eye spots present at the level of anterior edge of pharynx. Oral sucker, measuring 0.272 × 0.150 mm, provided with two rows of big, almost equal spines (length 0.078—0.090 mm), each row consisting of 19 or 20 spines. Prepharynx short, globular pharynx measuring 0.190 × 0.190 mm. Oesophagus indistinct, wide caeca reaching nearly to end of body. Acetabulum measuring 0.408 × 0.286 mm situated at the boundary of the first and the second third of body length. Testes measuring 0.136 × 0.082 mm, ovary 0.060 × × 0.051 mm. Posterior part of body filled in with excretory vesicle.

The number, distribution and size of spines of the oral sucker of the metacercaria found resemble the species *S. amoenum* Manter, 1940 and *S. longisomum* Manter, 1940.